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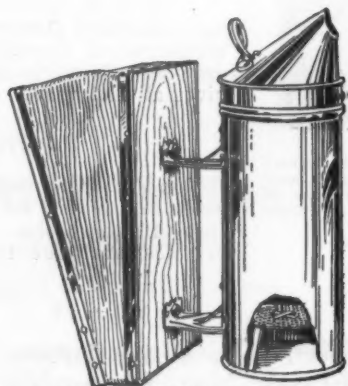


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CONTENTS OF THIS NUMBER

A Survey of Wisconsin Beekeeping—H. F. Wilson	223	nies Without Decreasing Our Crop?—J. E. Crane	234	Breeding a Hardier Race of Bees—John Protheroe	243
Keeping Up Brood Rearing in a Dearth—C. P. Dadant	226	What Do Bees Do With Brood Cappings?—Bruce Lineburg	235	Straw Hives—Peter Schaffhauser	243
Treating Isle of Wight—G. H. Cale	227	Maryland Beekeepers by the Way—Ernest N. Cory	236	Peaks and Valleys in Marketing Organization—Samuel Hagerman	243
Language of Bees—Wallace Park	227	Millions of Honey at Our House—E. M. Cole	238	Introducing Queens—F. M. Baldwin	244
Editorials	228-229	Bees at Manitoba College of Agriculture	239	Filling Pails, Apiary Shade—A. G. Kuersten	245
Queen Rearing in Cheshire—Arthur Sturgis	230	European Foulbrood—W. H. Lewis	239	Does Beekeeping Pay?—A. L. Kleeber	245
Carniolan Bees—E. F. Atwater	231	The Huber Letters	240	Will Bees Steal Eggs?—Geo. D. Larsen	245
Temperature of the Bee's Body—Wallace Park	232	Quality of Basswood Honey—Geo. M. Jeffus	242	Editor's Answers	246
How Can We Increase Our Colo-		Baldensperger Letter	242	Odds and Ends	249

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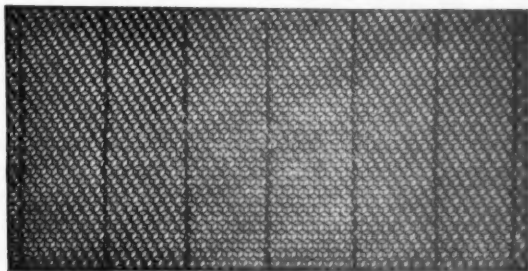
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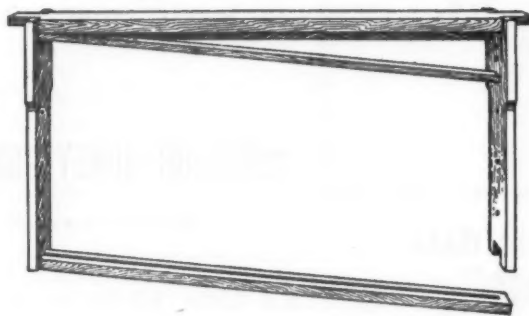
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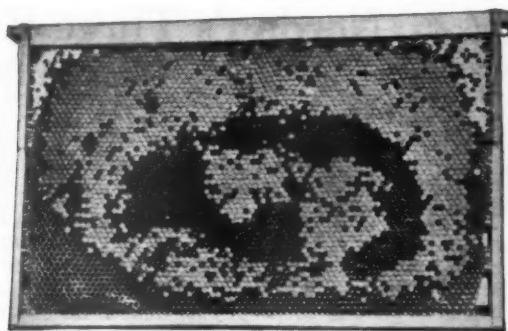


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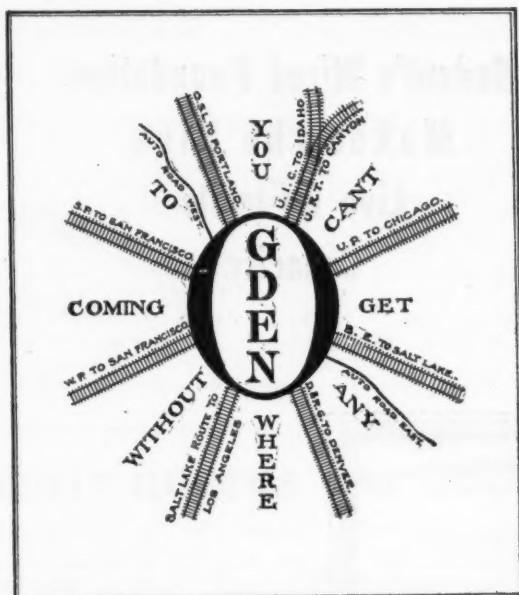
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1 select (one grade) untested queen	1.00
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HONEY FOR RADIATORS

By J. F. Diemer.

So much has been said about using honey in the radiator as a non-freezing and a cheaper mixture than alcohol and water that I fear people here in Missouri might find out about it. It is my belief that honey in radiators would be the most rapid foulbrood spreader since King Tut's time. Just think what a leaky radiator would do to us beekeepers when a warm day comes, and the bees would be out flying around waiting for maple to bloom and find the public square surrounded with flivers all loaded with warm honey and water! O boy! And to think how thousands of bees would gather round the front end of that old leaky Ford, 90 per cent of the owners would never pick up courage enough to take hold of the crank and wind it up, and if he is lucky enough to have a starter he would be sure to start her so quick that he would probably have several minor accidents before he hit the largest window in the biggest dry goods store and knocked down all the models and filled the big store with bees and emptied it of all its customers. Yes, it would be a lot of fun to see the show—but I won't want to catch foulbrood. And any way, why not use sugar syrup, or sorghum syrup? Do you think glucose mixed with water would do? Sure it would, and what is more, the fellow that buys honey for his radiator would, of course buy the cheapest. A radiator wouldn't care whether it was high-priced native honey or not, good or bad flavor, just so it didn't freeze is the way the owner would look at it. Now don't say that it will get hot enough to kill the disease, and please don't say that you can educate the dear people to boil it for 25 minutes before using. Anyway I think it would be a disgrace to the honey to put it in a dirty radiator. However, it might keep some timid thief from stealing your car if the weather was warm enough for the bees to fly.

Missouri.

(Sugar syrup or sorghum would not serve as non-freezing solutions, since to keep from freezing the mixture would have to be too thick to circulate properly. With all the boiling the auto radiator gets I would not fear the spread of disease from that source.—F. C. P.)

NATIVE HONEYBEES

By O. A. Stevens, North Dakota College of Agriculture.

With reference to the comment that Columbus reported honeybees in this country, I would like to suggest that these might have been species of *Trigona* or *Melipona*, the stingless bees of which some 200 species occur in tropical America. They are closely related to the common honeybee in that they live in colonies and build combs for brood and honey. The combs usually are not built of pure wax and the young are not fed by the workers. An account of these bees

with illustrations of their combs will be found in Dr. W. M. Wheeler's article on social insects in the *Scientific Monthly* for October, 1922.

The name *Apis Americana* was applied to one kind of bee by the entomologist Fabricius, but that was over 250 years ago, after the time of Columbus and the insect was a bumblebee, so that has nothing to do with the case. A word of caution might be added about the use of such names. Such technical names are held sacred, as it were by scientists who name insects, and they have trouble enough to keep count of them without interference from others. A few years ago a well-known botanist used certain names simply to illustrate a case, and then was accused of giving new names to plants with which he was not familiar. On another occasion an entomologist wrote a very entertaining account of a puzzling beetle, calling it "*Ignotus aenigmaticus*." Although not so intended this name was obliged to remain the official name of the beetle.

DOES BEEKEEPING PAY?

By Geo. W. Pillman.

To one who has studied the fine points of apiculture, it seems that this question could be answered in a few words. It pays, and don't pay. It all depends on given situations, location, the ability and the accumulated knowledge of the person who is keeping bees.

One of the problems of the professionals in our line is to get money out of the crops after they have produced them—to make them pay. For if we do not use any head work in selling our crops, even though we work a thousand colonies and produce honey in car lots, if we cannot solve the problem of profitably marketing our product, it still might be an underpaying proposition. The article by W. J. Shelley, in March issue, is a point in view. His problem obviously is to work out a plan whereby he can get more money for his product. Could this not be done by establishing selling agents in cities of considerable size where such products are sold? Situated as he seems to be, a long ways from a market, he has the option of taking what he can get for his honey, or keeping it. If he would remedy this condition, it is plain that he has other problems to solve besides the production of large crops. I venture to say, that the smallest of his returns cannot be altogether a matter of high freight rates, for last year many of the St. Louis retail merchants were selling light California honey as low as 40 and 50 cents per quart jar to the consumer; while I was seeking to sell my small crop of several tons of Missouri honey to some of these same merchants handling California honey at \$8.50 and \$9 per case of one dozen quarts. We see here a situation that knocks the price of honey. One man located over 2,000 miles from the St. Louis market produces car loads of honey and practically gives it away at the point of production; it is thence

shipped across the continent and given away again. When we seek to sell our honey in our home market many of them laugh at us, and tell us they can get the finest California honey at 8 and 10 cents a pound. Do we cut our prices to compete with this shipped-in honey? Speaking for the general average of Missouri beekeepers, I will say we do not. The way we do things in Missouri is to get around 30c a pound for our honey. And even though our colonies are not numerous, we find that beekeeping pays; at least better than farming; and as well perhaps, as some less interesting lines of business.

Missouri.

HELPING QUEENLESS HIVES

By L. H. Cobb.

A queenless hive in the spring will quickly dwindle if a queen is not given very soon. I had one colony that became queenless and when I discovered it laying workers were already busy. I had lots of trouble getting rid of the workers, and to keep the bees busy rearing new brood while I was inducing the bees to build queen cells, I had to supply eggs from other hives. To do this without much weakening to these other hives at this season when taking a few bees meant so much was a problem. I solved it by putting a built out comb in a fairly strong hive in place of a frame of brood removed, and when the eggs were deposited in it changed back. The queen, finding her supply of brood reduced, filled it quickly, and her own brood was being cared for by the other colony, and was returned to her when the eggs were removed. This disturbs our hives some but does not greatly check them in building up, and the bees in the queenless hive will rear the brood nicely. This way they can be given all the brood they can care for and will rear their queen cell and have young bees ready long before they would if they had to wait for the young queen to begin to lay. I really think the best plan, though, especially where laying workers have started, is to unite the queenless hive with another instead of trying to requeen, and more so if there is a weak colony that is queenright that could be made to build up fast with the help the uniting would give. There is no gain in keeping weak colonies. I would send for a package of bees from the south if I did want to keep them and these bees would give the strength needed to make them build into strong gatherers.

Kansas.

Missouri Gets Appropriation

Missouri beekeepers are elated because the Legislature has appropriated \$8,000 for foulbrood eradication. It is proposed to secure a competent man to supervise the inspection work and to make a serious effort to clean up the state. Missouri may yet set a good example to other states which have been slow to get into action.

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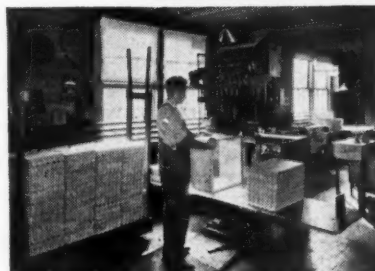
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VOL. LXIII—NO. 5

HAMILTON, ILL., MAY, 1923

MONTHLY, \$1.50 A YEAR

HONEY REGIONS OF WISCONSIN ✓

By H. F. Wilson, University of Wisconsin.

REGIONAL differences as applied to beekeeping are sometimes hard to determine distinctly because local conditions in every designated region frequently have a more important bearing upon the success of individual beekeepers. In any region where there is a succession of highland and lowland, lakes, rivers and wide differences in soil types, there must be a corresponding local difference in nectar secretion. In general the entire state except the sandy region in the central part is suitable for productive beekeeping.

As a beekeeping section, Wisconsin is considered to be a part of the clover region, and it is true that the greater part of our surplus comes from white and alsike clover. This being the case, it should be comparatively easy to follow a definite system of manipulations in securing the crop. But inquiry among the beekeepers has brought out the fact that Wisconsin is divided into several distinct regions from the crop standpoint and that the same plan of manipulation does not work out in all regions. The general plan of manipulation as recommended by Phillips for the clover region works fairly well in the southern part of the state as far north as Pierce County in the west and Osaukee County in the east. In the northern portions of the state, because of the cooler climate and prolonged secretion of nectar from clover, swarm control appears to be a much more difficult problem and the general plan of manipulation must be slightly different. The greater portion of the Wisconsin honey crop comes from alsike and white clover, although considerable quantities of basswood honey are secured in the eastern and northern parts of the state where basswood has not yet been logged off.

Topography

Wisconsin may be said to be mostly rolling in nature, although high bluffs occur along the Mississippi River and a few high hills are to be found scattered here and there. Our geographers speak of it as a T-shaped swell running from north to south and lying between three depressions, Lake Michigan on the east, Lake Superior on the north and the Mississippi Valley on the west. Drainage is thus effected to the north, east and west.

This swell averages about 1,000 feet elevation at the extreme south in La Fayette and Iowa Counties and about 1,800 feet along the Michigan boundary. The natural result of this condition is that after deforestation, when the land is brought under cultivation the higher lands dry out during the summer and a shorter period of nectar secretion follows.

It is difficult to compare Northern Wisconsin in this respect, because there is less land under cultivation; there are more lakes and a considerable part of the country is influenced by air currents from Lake Superior.

Along the little valleys which run into the Mississippi River the topography plays a very important part in nectar secretion, more especially with basswood. The trees on the higher elevations bloom earlier than those lower down and this creates a much larger period of nectar secretion advantageous to the beekeeper.

Climate

The mean average temperature for eighty stations is 43.3 degrees F. The average temperature of Wisconsin varies from 48 degrees for the southwest corner of the state to 39 degrees F. for the northwest portion.

The mean temperatures resemble those of eastern England, Poland and parts of Germany, though the summers are warmer and the winters colder.

The yearly average precipitation varies from 28 to 34 inches, with an average of 31 inches.

The yearly average snowfall of Wisconsin is about 45 inches. In the northern part of the state the ground is normally covered with snow from December to April, while in the southern part the ground is only covered with snow from late December or early January to the middle of March.

The weather records show that we receive about 40 per cent of the possible sunshine during winter and about 56 per cent during the summer.

The Soils of Wisconsin

Wisconsin is divided into six main soil types. The accompanying map shows the distribution of these and the following descriptions give the general composition. (Fig 1).

The soils of the area numbered 1 are largely silt loam of excellent fertility, varying somewhat in stoniness, certain sections which are glacial moraines, being rather stony, but outside of this the stoniness is not serious. There is considerable marsh land scattered throughout this section, forming probably 20 per cent of the total. This is about the most fertile and productive portion of the state.

The section numbered 2 has large silt loam soils, but it is characterized by deep valleys and drainage lines, making the country much more rough and broken, though there is considerable excellent agricultural land in the divides. There is practically no

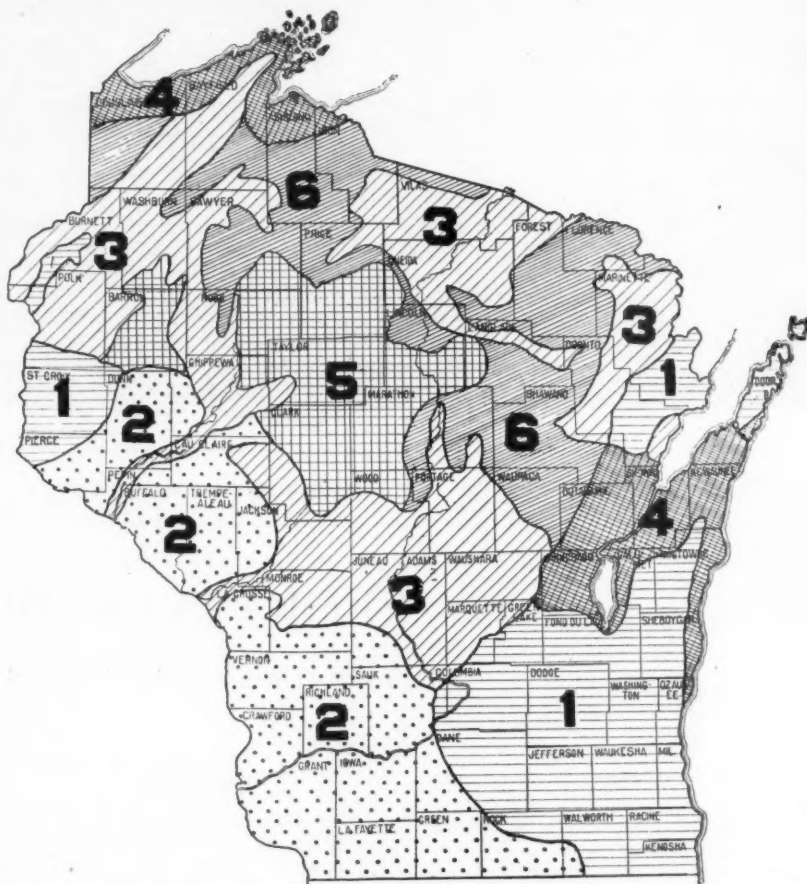
marsh land or stony soil in this section.

The soil numbered 3 is largely sandy soils varying from very poor sand through fine sand to sandy loam. There is a large amount of marsh land scattered over all of the areas of this class. The area in Vilas and Oneida Counties, especially, is quite stony and rough and broken. Most of the other areas are available for agriculture, though of a rather low grade. The chief crops are corn, rye and clover, with soy beans developing rapidly.

The area marked 4 is heavy red clay, varying from quite level to somewhat rough and broken, especially in the northern part, where it is cut by deep ravines running upward from the lake. This is an excellent grain and clover soil, and the eastern area is already highly developed.

The area marked 5 is a rather heavy silt loam with fairly heavy subsoil, and varies in topography some, being rather level, so that with its texture and the nature of its subsoil it has rather poor underdrainage. On the other hand, the undulating and rolling portions are fairly well drained. This whole region is developing rapidly into a very productive country. Dairying and the raising of grain or hay are the chief lines.

The areas marked 6 have surface soil varying from fine sandy loam to loam and silt loam, with rather gravelly subsoil, giving them good underdrainage. For the most part they are somewhat irregular in surface, some



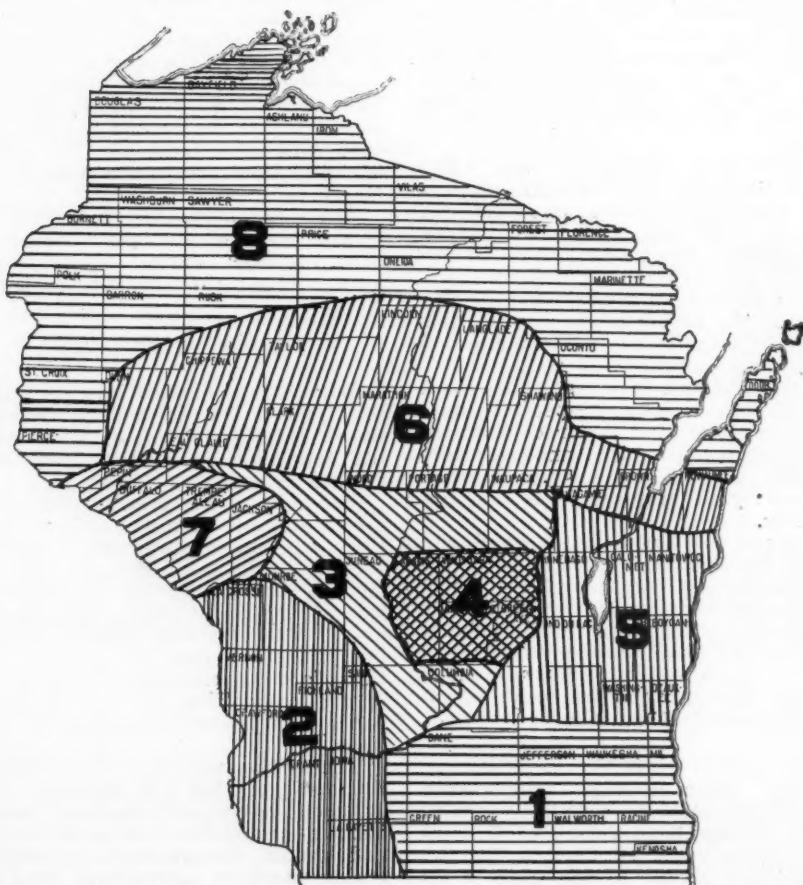
Soil map of Wisconsin. In choosing a location it is important to know something of the soil, since honey flows are much more dependable on the better soils.

portions being rather rough, and some having considerable marsh land scattered over them. This class of land is adapted to a wide range of agriculture, and general and dairy farming and potato growing are the leading lines.

The Principal Honey Plants

There are hundreds of plants in Wisconsin which produce pollen and nectar to a more or less degree, but those which our beekeepers consider important are the elms, maples, dandelion, wild raspberry, clovers, basswood, fireweed, buckwheat, goldenrod and several species of aster.

Elms and maples are important in the early spring. They come out about the same time; reports from beekeepers show that in the southern part of the state, they normally bloom about the first of April, although they have bloomed as early as March 18. In the northern part of the state the normal blooming period of all plants is about a week to two weeks later, following the general ranges of the blooming periods of the Duchess apple shown in Fig. 2. The dandelions may appear in protected places as early as the middle of April, but the normal period is about May 1 in the south half of the state. The average blooming period begins in northern Wisconsin about May 15 to May 20. This flower has for the past few years appeared in great abundance throughout the state and continues over a considerable period of time. It is not



Natural beekeeping regions of the state of Wisconsin. Some of these regions overlap several soil areas, as shown in the soil map.

uncommon for beekeepers farther north to gather a surplus of twenty-five pounds per colony on strong colonies.

Wild raspberry at one time, undoubtedly, covered a greater part of our state, but it is now of little importance in highly cultivated sections. It usually comes with the fruit bloom about May 15 in the south to June 15 in the north. Several beekeepers along the Mississippi River report that it often blooms in their sections as early as the middle of May. In normal years, a good beekeeper may, where this plant abounds, get a very profitable surplus. It naturally has a delicious flavor and where mixed with clover produces a most excellent blend.

The Clovers

White and alsike clover are the main honey-producing plants of Wisconsin. The white clover occurs in pasture land throughout the state except where the soil is too sandy. It begins blooming about June 1 and continues until August or September if the moisture conditions are good. In northern Wisconsin, we find clover growing in such abundance that it almost appears to thrive at the cost of other plants.

Alsike clover thrives equally well and has spread into uncultivated areas to such an extent that it occurs along the roadways and fence rows in sufficient quantities to give a surplus of honey even where most of the fields are in other crops. Alsike clover begins blooming about May 20 to June 10, but the secretion of nectar does not follow for one to two weeks later. At Madison, we may expect the honey flow to start in real earnest, about June 10 to 15. As a rule, at Madison, the flow from clover is four to six weeks, although in exceptional years it may last for only a few days. In northern Wisconsin, the flow is not so rapid but continues much longer, because of cooler weather. The climate of northern Wisconsin is ideal for the growing of clover and for nectar secretion, the days being warm and the nights cool. Oftentimes a few very hot days with cool nights will cause the clover to secrete so abundantly that one is almost stifled by the aroma which penetrates the air of the fields.

Sweet clover has a very poorly defined value in Wisconsin, as most of our beekeepers report little or no surplus from this source. Surplus production from this plant is limited to the southeastern part of the state. Sweet clover certainly does not secrete as abundantly as in states west and south of us.

Basswood honey, once forming a large part of the honey crop of Wisconsin, is now produced only in limited quantities, and for the most part not as a distinct crop. Small groups of basswood trees may be found in every county in the state, but as the trees only secrete about once in three or four years, the crop is negligible. Along the Mississippi River and on the hills extending back for a number of miles there are still many bass-

wood trees standing and the beekeepers in this section rarely fail to get some basswood. In the north and northwest sections of the state the basswood locations are also more or less spotted, according to the abundance of standing trees. Normally, the basswood flow begins about July 1 in the extreme southern part of the state and about July 10 to 20 in the northern part. The flow may continue from four or five days to two weeks, depending upon local condition.

Buckwheat honey has been produced as far north as Bayfield County and is commonly produced in the southern tier of counties. One may expect to find fields of buckwheat in almost every county of the state, but only in the sandy sections is there sufficient acreage to produce a surplus.

Usually a large number of fields are to be found in Sauk, Columbia, Monroe, Jackson, Trempealeau, Waushara, Portage, Waupaca and Green Lake Counties, which lie together in the central part of the state and in which there is a great preponderance of sandy soil, according to the records sent in by our leading beekeepers. The buckwheat flow starts about August 1 and may continue for several weeks.

Goldenrod is still an unknown quantity in honey production. It is not abundant in the southern part of the state, but covers large areas in northern Wisconsin. Some of our beekeepers report that they get a large surplus from this plant. The

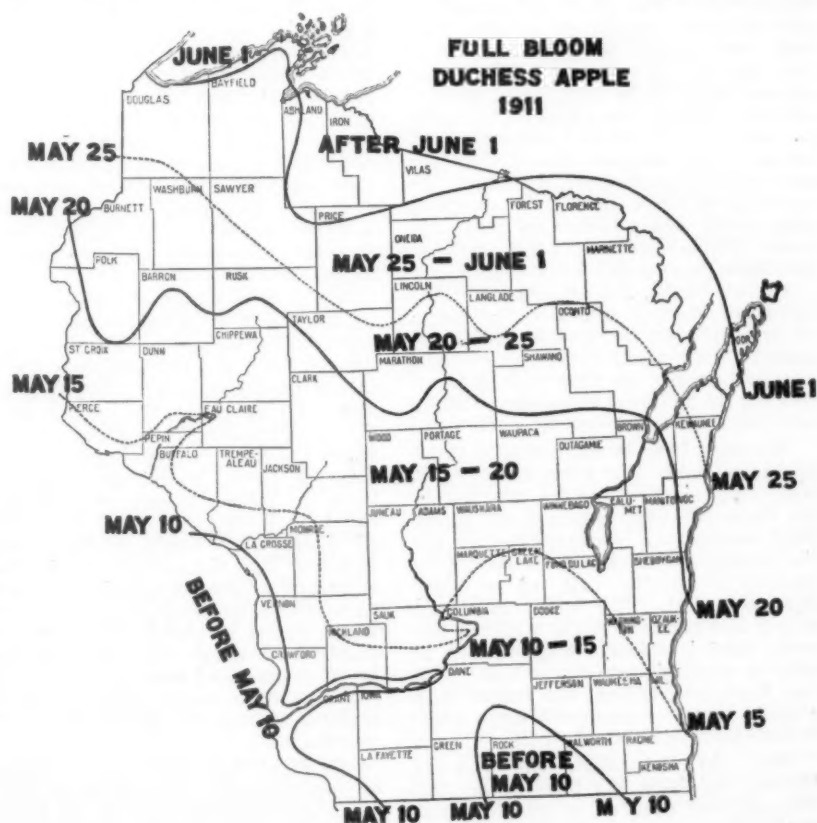
extracting supers per colony were filled.

"Aster" is a common name applied to all kinds of fall flowers and a combination of these usually produce a surplus in the swampy sections, especially along the river bottoms and in the lake sections of northern Wisconsin. The honey is a golden yellow with a distinct and rather strong flavor. The true asters represent several species which secrete nectar abundantly, but no effort has been made to determine the species.

Wisconsin Beekeeping Regions

The division of Wisconsin into so-called beekeeping regions must be made on more or less artificial lines. The entire state lies in what is known as the clover region and other plants which produce a surplus of honey were at one time distributed over the entire state, except in the sand areas of regions three and four. Bringing the land under cultivation has changed conditions considerably in the south and east sections by removing most of the basswood, raspberry and fall flowers. For the purpose of discussion the state has been divided into eight sections.

Region 1. In the minds of most of our beekeepers, regions 1 and 5 are the same, but in reality there is a difference. If there is a distinct sweet clover region, it occurs in Section 1. A surplus from sweet clover was secured over all of this territory and wherever the conditions are right, the beekeepers secure a surplus every year. There is perhaps less alsike



Map showing advance of the season by the blooming date of the Dutchess apple in Wisconsin.

clover grown in this region than in region 5 at this time.

Region 2. This section is more broken and rough and is a succession of hills and valleys. Many basswood trees are still found here and a surplus of basswood is secured, but it is usually mixed with clover. Along the river bottoms, small amounts of fall honey are secured.

Regions 3 and 4. These regions are mostly sand areas and constitute the principal buckwheat-producing areas. Fewer bees are found in these areas than in any other region.

Region 4. This section is mostly poor sand and is not a good beekeeping section. Few bees are found in this area.

Region 5. This region is one of the best beekeeping sections of the state. Many farmers in this region grow alsike clover seed, and cool nights with warm days bring a fine nectar secretion. A good beekeeper can be assured of big crops in this section almost without fail.

Region 6. This section is more difficult to set aside from 5 and 8, because of an overlapping of the conditions found in the two latter regions. It differs from Region 5 in that there is less land in cultivation and not so much clover. The nectar flow is longer and a surplus of goldenrod can always be secured in the fall.

Region 7. This is similar to Region 2, but being farther north, climatic conditions produce a more favorable situation. There is more sand in the eastern part and most of the beekeepers are on the hills.

Region 8. This region is not well developed and contains comparatively few beekeepers.

There are spotted areas where the crops are not so good, but in general this entire region is unsurpassed for honey production. "Cloverland" is no misnomer and the blooming period continues from spring until frost in the fall. Fireweed abounds in the cut-over areas and in the fall there are great acreages of goldenrod, asters and other fall flowers.

ble ourselves, except to make sure that the bees do not get short during the heavy breeding, which might be the case if rainy days come. The quantity of honey consumed by a colony during the breeding is probably larger than the average beekeeper imagines. Then, too, bees hesitate to unseal honey for brood rearing. But I am inclined to believe that this dislike of bees to use sealed honey may be more or less noticeable in different races. Some bees are lavish, they spend honey even when they ought to save; this was the fault which the Swiss beekeepers found in the Italian bees imported into their country; they claimed and proved to me "de visu" that while Italians would continue to breed in August, after their honey crop was entirely at end, the common Swiss bees husbanded their crop so as to have an ample quantity for winter. I ascribed it to the fact that the Italian bees in their native country were used to blossoms till fall, while between the Swiss white-capped mountains, the fall weather was too cool for honey production.

Be this as it may, our bees during the breeding months will make a mistake which we must not permit, if they hesitate to consume the sealed honey in breeding. They act like a housekeeper who would hesitate to open her jars of "canned goods," for home consumption, when the fresh harvest is near.

There must be an ample supply of honey in the hive. But when all the unsealed honey, fresh harvested, has been used up, if the bees lessen in their breeding, it is a good plan to uncap a little of the sealed honey, from time to time, to encourage them in using it. This, of course, is outside of the let-alone method which we are in the habit of pursuing. But I can well remember when we had but about a hundred colonies or so and I made the rounds of the apiary regularly, especially between crops, in order to encourage the bees in consuming honey for brood production.

I believe that I have already stated several times how I became convinced that bees need a large amount of stores, if they are to build up strong colonies for the harvest. But it will not hurt to tell it again.

In the olden days, when we began using the large hive, about equal to a story-and-a-half ten-frame Langstroth, the colonies in those hives had apparently more than enough to winter on, since we had successfully wintered bees on 8-frames of honey such as the brood chamber usually contains. So I was in the habit of removing 2 combs from the brood chamber every fall and extracting the honey from those two combs. It appeared to be clear gain.

Well, during one summer, we were so pressed with work that I did not take time to put guides in every frame, when hiving swarms (comb foundation was not yet in use), so that a number of swarms built their combs crooked and they could not be taken out for extracting. This lasted several years, and I noticed that each one of those colonies which wintered

KEEPING UP BROOD REARING IN A DEARTH

By C. P. Dadant.

ONE of the most trying things in a country of irregular flow is the keeping up of the brood-rearing previous to an anticipated honey flow. The great advantage of the northern countries is the fact that, the season being late to open, the flowers of the different honey plants follow each other in close succession; so that one series of blossoms is barely ended when another season opens. For instance, the fruit bloom may precede only by a few days the opening of white clover. Buckwheat may come when clover is barely at end. Thus the bees keep up an indefinite succession of breeding.

In the South, the opposite is often the case. Bloom comes in February, to be followed by several weeks of dearth, then another short flow and another dearth, so that it is difficult to keep up the brood rearing to make sure of a strong force at each flow.

We must bear in mind that it takes 35 days from the time the egg is laid in the cell, before the bee, hatching from the egg, becomes an active field worker. It takes 21 days for the young bee to hatch or rather to emerge from the cell, as a full fledged insect. But after that, the young bee remains for a week in the hive; then it takes a flight which is only a preliminary excursion. The real field work of that bee begins only a week later, or about 15 days after it has emerged from the cell.

Our old naturalist, the famous Huber, watching the bees as he did, through the eyes of others, did not realize the above facts, but he knew already that some bees were field workers, while others were nurses

and others still wax builders. But he could only mark a few bees for experiment. He did not have the opportunity of watching the change from one race to another, as we do nowadays when we watch the hatching of Italian bees in a colony of black bees. The change of occupation of the bees, as they grow older, is so well defined that we cannot discuss or deny the assertions of our elders, the men who, like Dzierzon, first watched these transformations. It is thus also that we find out what a short time a bee has to live in the summer, when she is busy carrying in pollen and honey.

When I speak of the above habits of the bee, I must state that this delay of two weeks in the hive, after emergence from the cell, is not absolutely unchangeable. Some circumstances may cause the young bee to fly out sooner in search of food, water, etc. When the colony swarms, most, if not all of the old bees go with the swarm. Then, if the hive is short of field bees, some of them may begin outdoor work earlier. But the custom of the bees, as stated above, is sufficient to warn us of the requirements if we wish to succeed; for in the words of Mr. Demuth: We must raise our field bees **for the crop and not upon the crop.** No better or more explicit way of putting it can be given in so few words.

We must then know about when to expect the crop, and we must try to raise our bees for it. If we have a succession of blossoms, maples, gooseberries, dandelions, fruit bloom, black locust, then clover, we need not trou-

on 10 combs Dadant-Quinby size, instead of 8, turned out better than the others. The secret of it was that they had an excess of honey in the brood chamber and did not stint as did those that were less furnished. This was enlightening, and from that time on, we ceased taking honey away from the brood chamber of those large hives.

But there are instances when the bees are really short, between two crops; as they are with us here, if the fruit bloom is a failure, for the clover crop is still six weeks away. Then we must feed. The food given, in small quantity, must be thin and warm; thin because the bees need considerable water to produce the pap that is fed to the larvæ and—we are told—also to the queen. Warm because the hive needs warmth in spring and there is nothing more trying upon field workers than to fly to the brook, in cool weather, to suck up cold water.

If it were not for the annoyance of feeding and the time it takes, I would very much like to feed my bees every day or every other day, a small quantity, when there are no blossoms supplying nectar. See them, as soon as they find the food; they hustle about and evidently tell one another that food has been found; for some of them immediately sally forth. And, by the way, feeding in weather that is too cold for the bees to fly should be avoided, for many will get lost, thinking honey is to be had in the field.

But bees soon learn where the food is to be had. So they readily become acquainted with the method of supply and the location of it. It was old Mr. Langstroth's great pleasure to exhibit to visitors how readily bees had learned the time and place of a food supply. I was present at his home, one day, when at about four o'clock in the afternoon, he glanced out of the window and said, "Yes, here they are," pointing to a few bees flying about. Then he explained that he was in the habit of feeding his four or five colonies of bees, at that spot, every afternoon at four o'clock. The bees expected it: it was during the dry weather, when nothing else could be had, and they evidently knew that looking for it at any other moment was a waste of time.

But I must close these reminiscences of olden days. Whatever you do, do not let your bees remain short of food when they ought to be breeding, if there is nothing in the field. But look out for robbers. Nothing is more likely to render life miserable than the cultivation of the thieving propensity among our little pets.

EXPERIENCES IN TREATING ISLE OF WIGHT

In view of the disastrous effect of the Isle of Wight disease to beekeeping in the British Isles, much impetus has been given to studies of treatment. Previous to the discovery of the mite, however, most experimenters were in the dark as to the correct methods to use.

Since the disease is known to be

caused by small mites in the larger breathing pores of adult bees it has become evident that successful treatment will aim to destroy the mites without affecting the bees. Work along this line is probably being done by a number of investigators. In the British Bee Journal for September there appears an account of the experiments of J. W. Moir, Librarian of the Scottish Beekeepers' Association, who apparently was assisted by Dr. Rennie. Moir used various forms of sulphur; ammonium sulphide, collosol sulphur, colloidal and precipitated sulphur.

He was most successful in the use of collosol sulphur. Apparently this is a liquid form of sulphur, and he suggests that one ounce of one per cent collosol sulphur and four pints of sugar syrup is a desirable dose. When this is fed to bees it apparently reaches the blood stream and, according to Moir, kills the mite in about twenty days. Dr. Rennie examined the bees so treated and found them almost free of living mites.

Collosol sulphur is expensive, and Moir suggests that precipitated sulphur might be used, mixing two ounces per gallon of syrup. A caution is advanced against understanding that the details of such treatment are certain, since it is still an experiment. It is to be hoped, however, that the investigations will be entirely successful.—G. H. C.

THE LANGUAGE OF BEES

By Wallace Park, Iowa Experiment Station.

In the Scientific American for August, 1922, there appeared a review of an article on "The Language of Bees." There was an abstract of this review in the Literary Digest for September, 1922. Although both periodicals are widely read, these reviews appeared in such inconspicuous places in their columns that it seems doubtful whether the results reported therein are yet before the beekeeping fraternity in America. In fact, it was not until November that these articles came to my attention. The original paper, which was published in the Munich Medizin Wochenschrift (1922), was by Prof. Karl von Frisch, a German investigator.

The results of Von Frisch's experiments lead to the conclusion that the "dance" performed at times by loaded fielders just returned to the hive, is a means employed to inform other bees that food is to be had for the getting. This method of communication, however, is inadequate to give the location of the food unless that be already known to the recipient of the message.

I deem it a privilege to be able, at this time to confirm the conclusion of Prof. von Frisch through observations and experiments of my own on this very subject which have been carried on at the Iowa Experiment Station at intervals ever since the summer of 1919. A brief description of the "dancing" bee as seen in a one-frame observation hive appears in my notes on "Behavior of Water Carriers," recorded December 29, 1919, and is at

follows: "Attention was soon attracted to certain individual workers that would come in, bustling and business-like, through the throng. Such an individual was soon set upon by other workers (the number varying from 2 to 5) that followed her as she turned round and round, darting this way and that in make-believe efforts to free herself from these meddlers, like a puppy with a bone, set upon by other puppies."

In my notes for April 19, 1920, under the caption, "Some Maneuvers Seen in an Observation Hive," I referred to the above description and recorded my tentative conclusion regarding the significance of the "dancing" bee as follows: "Characteristic of a worker that has located a source of pollen, nectar or water and has a load to give up. Possibly such a bee is trying to attract the attention of other bees in order that they may help carry home the plunder."

On the same day, April 19, 1920, I reported the above conclusion to Dr. E. D. Ball, who at that time had supervision of my work and who now is Director of Scientific Research in the U. S. Department of Agriculture. A few days later, I confided the matter to Prof. F. B. Paddock, State Apiarist of Iowa, and since that time have mentioned my observation on this subject to a limited number of others.

Further observations showed that, with some exceptions, an individual that attempted to approach the "dancer" left for the field in less than two minutes after coming in contact with her. Some would leave at once, but others appeared to find it necessary to prepare for the trip by securing a little food from other bees or from a cell.

Thus, working independently, the two of us arrived at the same conclusion at about the same time.

English Weather

I think Mr. Leatham's note on page 572 has been misprinted. The record of rainfall here for the six summer months is given as below:

April—Rainfall on 16 days, total fall 2.76 in.; above average 1.10 in.

May—Rainfall on 10 days, total fall 1.09 in.; below average 0.91 in.

June—Rainfall on 11 days, total fall 1.39 in.; below average 0.63 in.

July—Rainfall on 21 days, total fall 3.20 in.; above average 0.73 in.

August—Rainfall on 17 days, total fall 2.32 in.; below average 0.03 in.

September—Rainfall on 14 days, total fall 1.70 in.; below average 0.55 in.

It will thus be seen that July was our worst month and August nearly as bad from the point of view of beekeeping. May was a good month and so was the first half of June. From May 1 to June 15 was one of the driest and finest 6 weeks I can remember for that time of year. In fact, the drought was very severe in the midlands and south of England. Although 1.09 inches fell in 10 days, this fall mostly consisted of night showers.

R. B. Manley,
Bladon, Woodstock, England.

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THE EDITORS' VIEWPOINTS

AMERICAN AND EUROPEAN FOULBROODS

Those names are deceiving to those who do not know that they have been given to the two kinds of foulbrood, not because they originated from America and Europe, but because they were each described originally in those countries. An evidence of the misunderstanding produced by the names is found in the "Revue Francaise d'Apiculture," in which Mr. Tellier, secretary of an association, says:

"We produce already too much honey and two countries close their doors against us, and America floods us with its inferior products, and as many consumers are amateurs rather than connoisseurs their honey sells at a price at least equal to ours, bringing 3 francs 50 at Havre, where one could get fine white French honey at a price at least as low. If we needed those honeys, it might do, but we have already too much. Moreover, it is the importation of American honeys which causes in France the terrible disease known as 'American foulbrood.'"

This party would need to be told that the so-called American foulbrood was described in Europe and cured by Schirach in 1771, for it is described in his work, "His toire Naturelle de la Reine des Abeilles," and the present methods of cure already given by him. Foulbrood was known on the European Continent before America had any bees at all. Of course, this is an excellent argument in favor of protection; each country trying to protect itself against its neighbors.

HONEYDEW AND WINTER LOSSES

It appears, from European magazines, that there was a heavy winter loss, in Alsace-Lorraine, in the winter of 1921-22, because the bees, in some parts of those provinces, harvested large quantities of honeydew from pines, in October, 1921. We have always noticed a great mortality in bees from honeydew as winter stores in this country, and this only serves to confirm that opinion.

IS THE HONEYBEE A COLD-BLOODED INSECT?

We are told that the Greek philosopher, Democritus, described Truth as a nude goddess hiding at the bottom of a well. The description seems good, for Truth is sometimes very difficult to discover.

It sometimes happens that the experiments of scientists do not appear to agree, that the one seems to contradict the other; yet we know that most of those experiments are conducted in a most careful way.

Of this nature appear to be the experiments concerning the heat of the bee's body. Is it a cold-blooded insect or not?

The article on the "Temperature of the Bee's Body," by our good friend Dr. Brunnich, in the April number, page 188, has been criticized, or rather we have been criticized for publishing it, for two reasons. In the first place our critics find fault with the use of the Centigrade

system of temperature thermometers, because the average man in the United States knows no other than the Fahrenheit. It is true, but since all scientists in every country use it exclusively and since the common people in most countries also use the Centigrade thermometer, ought we not to learn to understand it? The difference between them is that, with the Fahrenheit, we put the freezing point of water at 32 degrees of heat and its boiling point at 212, while the Centigrade puts freezing at 0 and the boiling point at 100.

The second criticism is a suggestion that Dr. Brunnich's temperatures, as given, are incorrect, and that he must have unwittingly taken the temperature of his own body, with the exceedingly small thermometers which he had to use.

We are not scientists, but we know that a colony of bees produces a great deal of heat, whether from their own bodies or from exertions and food consumption. We know also that the cluster does not form compactly until the thermometer goes below 57 F, which equals about 14 C. This was shown by the experiments of Phillips and Demuth.

We must get Truth out of that well, even if we have to clothe her with some kind of kimono. We are sure that Dr. Brunnich is also after the truth. So we have submitted the question to Dr. Wallace Park, of Iowa, and his comments upon the question will be found in this number. We will welcome any other suggestion or test that may lead us to the actual facts concerning the body temperature of the honeybee. Dr. Brunnich protests that he did not get any other temperature than that of the bee individually. His figures make the worker bee's temperature 102 F., and that of the drone and the brood 113 F.

THE GOLDEN BEE

On page 182 of "The Bee World" for February, a contributor has this to say:

"The brown or yellowish bands of the strains imported from Italy frequently disappear in the first generation where mating with a black drone has taken place, whilst in the case of the American strains the golden color is observable after two or three generations of mismatings. This again points to the 'hybrid' character of many of the strains imported from Italy."

Our experience of the "golden" bee is similar. As early as 1867, when the elder Dadant bought an Italian queen from an American breeder of yellowish Italians, we noticed that the mismatings barely indicated a slight lessening of the golden color, so that full hybrids could pass for good Italian bees. But when we imported largely pure Italian bees from Italy, as they were not inbred for color, the least mixture with black blood showed plainly the "half and half." I suggest that the latter condition is better, if we wish to secure only pure bees, for, with the former bee, we are never sure that our bees are pure, as they have been so bred for color that color sticks in spite of mismating. It is certainly very flattering for the breeder of the American-Italian bee to think that it is preferred, in some parts of Europe, to the Italian-Italian, but it certainly cannot be purer Italian than the Italian bee in central Italy.

We have shown, in October, 1915, American Bee Journal, that the only part of Italy where there is connection with the common black bee is along the mountainous edge of the Riviera, where the Ligurian Alps permit a slight mixture occasionally. In the United States, on the other hand, it is only by constant weeding out that we can keep our Italian bees relatively pure. For this reason, the breeder who realizes that the average purchaser wants yellow bees, will continue to breed for color. But the beekeeper who wishes to produce honey largely must remember that prolificness, quietness on the combs when the hive is opened and gentleness are also some of the important qualities of the pure Italian bees.

WIRING SHALLOW SUPER COMBS

There is no need of wiring combs that are 6 inches or less in depth, if they are built on good foundation. They are much safer for heavy crops than the full depth super combs. Those who experiment upon such things on a large scale soon come to a positive opinion.

THE EGYPTIAN BEE

Dr. Gough, of the Entomological section of the Ministry of Agriculture of Cairo, Egypt, writes a long article upon the Egyptian bee in the "Bee World" of March, 1923. He speaks of it as "hardly more aggressive than the Cyprus or the Italian bee."

Well, we don't want any bees even as aggressive as the Cyprus bees. Wonder whether he has ever handled that race!

A very interesting point is the statement concerning the "half-queens" which he mentions as reported by Rotter and Vogel, and which appear to be "closer to laying workers than to sexual females." There is a point which needs further information. We quote:

"Although only one mated queen is to be found in a colony, the number of unmated queens found at a time, when requeening is going on, is apparently only limited by the size of the colony, and the space suitable for producing queen cells along the fringes of the combs! The highest number of queen cells I personally have cut out of a single hive was over five hundred."

THE EDITOR'S BIRTHDAY

Through a conspiracy, organized by friend Pellett and the American Bee Journal office force, the announcement was privately made that the editor would reach his seventy-second anniversary on the 6th of April. The result was an avalanche of letters of congratulation from all directions, in the United States and Canada.

Friends, I am overwhelmed, both by the number of well-wishers who have taken time to write me such fine complimentary letters, and by the sentiments expressed by all.

Almost every one of the editors of bee magazines in North America, many professors and teachers of beekeeping, apiary inspectors, entomologists, scientists, presidents and secretaries of beekeepers' associations, leaders in beekeeping, competitors in business, friends, employees or former employees, neighbors, etc., united in this delightful private demonstration. I find myself praised for more than I have ever done.

One man reminds me that he began working for me when he was only 10 years old, between school terms, and gives me credit for his success, or at least a good part of it; yet I only looked on favorably while he was working.

Another man, a "rough-rider" of the Roosevelt fighters, a man who has made his way, without need of help, holds that I had a part in the success of his co-operative association because of timely advice. It certainly pleases me to think that I have helped anything, but most of the praise is undeserved.

Perhaps the most valuable compliments that have come, in this avalanche of congratulations, were from business competitors, who praise my fairness in business. Well, I have surely tried to be fair, and I am very thankful that I have succeeded in this.

If I judge by the pleasure it has given me, it would be well for us to give our friends such demonstrations as this a little oftener than we do. Those little things help to make life a joy.—C. P. Dadant.

SPANISH HONEY

The editor acknowledges receipt of a sample of honey from Miraflores de la Sierra, near Madrid Spain, produced in the apiary of the editor of the apiary section of the "Revista Social Y Agraria," Senor N. J. De Linan Y Heredia. It is excellent, of beautiful light amber color, and evidently mountain honey.

BOOKS OR MAGAZINES FIRST

In "L'Abeille," of Quebec, for April, Mr. Vaillancourt criticizes the man who proposes to read up on bees only after he has kept bees for some time. He says that such a man will not succeed readily, and compares him to a child who would expect to be able to read before having learned his A-B-C's.

You need to read a textbook first of all. Many are the enquiries sent by men who own bees, but do not have the

most elementary information concerning them. Read the indispensable things first in a textbook; then subscribe to a magazine that will help you to keep posted on progress and new things, besides trying to help you in replying to the puzzling questions. But do not expect to succeed just by reading a magazine, if you do not already know the rudiments of the science. None of the agricultural branches requires more detailed information than does beekeeping, if we expect to make a success of it.

IT WORKS BOTH WAYS

We have just been advised that Germany has established an embargo against the importation of all American honey. This, we are told, is done as a reprisal because of our recently enacted law which prohibits the importation of queen bees from Europe. Unless the working of the embargo is modified to such an extent as will promptly make it possible to continue importations, other Central European countries threaten similar action. Since most of the foreign markets for honey are in the countries from which bees are imported, that may shortly close our present export markets.

HOW MUCH HONEY IS PRODUCED IN THE WORLD?

In the "Bee WORLD" Messrs. Willet and Grey are reported to estimate the total production of sugar in the world at 18,067,000 tons. Is the production of honey anywhere near a twenty-fifth part of this amount? That would be nearly a billion and a half pounds. Ought we not to be able to sell one pound of honey where 25 pounds of sugar is sold? Besides, much of the honey is produced where there are no markets for anything and never goes where it can compete with other sweets.

TOO MODEST?

A correspondent writes: "I think one thing on which the A. B. J. has been short in a certain amount of personality. The Dadant Modesty is a little over-developed. . ."

Well! Did you ever? I don't believe I was accused of modesty before this. Well, friend from Michigan, if you happen to read a little too much personal talk on the part of C. P. D., charge it up to that criticism.

It just happens that we are very much elated upon recent appreciation from a contemporary, the oldest bee magazine in the entire world, "L'Apiculteur," of Paris, the former editor of which magazine was H. Hamet, who was its founder and managed it from 1856 till his demise in 1889. He was much opposed to all changes in hives and methods, and especially to movable-frame hives. After his death, the magazine changed its aims to a great extent, but it never contained much praise of the Dadants, for Charles Dadant had been the "bete noire" (bugbear) of the early publisher, since he persisted in urging the Langstroth ideas upon the Europeans.

But now we find in this magazine a comment which is flattering enough to cancel all the ideas of "modesty" that we ever had. We quote from its February number:

"We are in receipt of the 'Dadant System of Beekeeping.' It is a work which has more than charmed us, that we will read over again, and that we would like to place in the hands of all beekeepers. Mr. Dadant, in 134 pages, has condensed, in an admirable manner, all that it is necessary to know in practice. Those who have read many works on bees, as we have, will find something more to learn in reading this small treatise. Besides, Mr. Dadant brings in his writings a spirit of liberalism, of frankness which we cannot praise too highly. It is not the work of a man who writes because he knows how, it is a practitioner who says: Here is what we did, here is where we succeeded and here is where we failed. With such a book, especially if one learns how to apply these methods in one's own country, one is sure to become a real beekeeper. It is simplified teaching."—E. Sevalle.

There! Don't say now that we are modest. But we are really proud of this occasion to do a little "personality."

QUEEN REARING IN CHESHIRE

By Arthur M. Sturgis

THE article in the January number of the American Bee Journal entitled "Queen Rearing in the Cotswolds" is apt to give, to American readers, a wrong impression of the state of the science in this country, and cannot be accepted as characteristic of the methods employed by other queen breeders, or of the conditions which obtain in other parts of the British Isles.

After the departure of Sladen from these shores in 1912, queen-breeding has largely fallen into disrepute, owing to the adoption of methods not in accordance with the principles of Nature, and contrary to the laws of queen-breeding enunciated by Doolittle.

As a result of these methods, involving, in many cases, the use of weak or only moderately strong, queenless colonies for the building of the cells, deterioration of the quality of the queens ensued, which fell in many cases below that of the queens imported into the country at low prices from Italy and elsewhere, with the ultimate result that the demand for British reared queens was greatly reduced.

During the past few years, however, more reliable methods of queen-rearing having been adopted by the leading breeders, the science has revived, and the queens produced are superior to those imported from the continent.

In Cheshire, about 120 miles north of the Cotswolds, it is possible to commence operations in early April, in normal seasons, and to have queens flying in early May, where the modern strains of Italian bees are used. Naturally, this early queen rearing, during a period of very small honey flow, requires considerable care and

can only be effected where insulating hives are used to conserve the natural heat of the colonies, and where outdoor feeding is practiced. In this district the provision of an adequate supply of pollen, during the early part of the year, presents great difficulty; this is met by the planting of



In Cheshire it is possible to start queen rearing in April and have queens flying in early May.

crocus bulbs, both in open beds and in boxes in glass houses, these latter bulbs being forced as required and transferred outdoors during suitable weather. By these means very early spring building up is insured and with the American strain, especially with the Goldens, it is usual to have drones flying in March or early April.



The mating colonies are supered during the honey flow, built up to ten frames and wintered in these hives.

The queen-rearing season extends from May 1 to August 20, or thereabouts, a period of 15 weeks.

During this period, provided the weather is favorable, large numbers of queens may be raised where modern methods are adopted, and in 1922, the worst season on record in the district, over 1,200 queens were produced at the Shenstone apiary; of these approximately 800 were mated, the balance being sent out as virgins or destroyed.

Utilizing strong queenright colonies on at least 30 standard (English) frames, worked on the Demaree system, and containing a very high percentage of nurse bees, a minimum of 15 queens per colony per week can be produced; though a much larger number could be raised were the number of cells per colony not limited strictly in order to ensure the production of the highest quality only. To ensure the production of the requirements of the 1923 season 15 such colonies are prepared for cell building, capable of a total output of 3,000 queens.

The Doolittle grafting system is adopted, the grafting operation being performed in a glass house at a minimum temperature of 90 degrees F. in a very humid atmosphere. With the strong colonies utilized for cell building, the grafted cups are readily accepted during the period of honey flow, though starting colonies are necessary in early May and late in the season.

The larvae are obtained from small colonies on three to six standard frames headed by the selected breeding queens; twenty breeders being selected for 1923.

In order to avoid mismatings—which now seldom occur—the whole of the district surrounding the apiary is requened with the selected strain for the season, and the apiary is swamped with drones of the selected strain, by placing one or more drone combs in the center of each of the

strong colonies used for cell building. Under these conditions mating frequently results within a few feet from the ground, and has been observed on several occasions.

The mating flights usually take place between 2 p. m. and 5 p. m. (summer time), though frequently both earlier and later in the day, and flights are frequently observed in dull weather and, at times, during slight rain.

Losses of queen during the mating flights are very exceptional and do not exceed 1 per cent from all causes, where bees of American or certain Italian strains are used in the mating nuclei; where strains containing Dutch, Syrian or Cyprian blood are used the losses in matings have been very great, largely due to the balling of the queens, owing to the extreme excitability of bees of these strains.

As previously reported, in the Bee World, a very high percentage of the queens produced in extremely strong colonies, from larvæ much smaller than those usually grafted, lavishly fed with royal jelly so that an excess of this remains in the cells after emergence of the queens, become mated at a very early age, and are invariably of high quality. As batches of these queens frequently become mated at the age of four or five days, in the height of the season, the output of the mating nuclei is much above that usually obtained, and when working these in the normal way, introducing ripe cells at the time of removal of the mated queens, three or four queens can be obtained per nucleus per month during weather suitable for mating.

Queens which do not become mated at an early age frequently delay the operation until 14 days or more have elapsed, and it is now the rule to destroy all virgins 10 days after emergence from the cell.

The mating boxes have been designed for rapid manipulation, and are larger than the baby hives used in the United States, which have been tried and discarded for several reasons; the chief fault being that the extremely small brood nest becomes clogged with honey and pollen during the main honey flow of this district.

The mating colonies which, housed on five frames 7x8 in., can be considered as miniature stocks, are supered during the honey flow, built up to 19 frames and allowed to winter in these hives, either outdoors or under cover during prolonged cold weather. The advantages to be gained from this method are obvious, as a large number of queens are thus available for early delivery, and the work of early spring is expedited.

These small colonies are very satisfactory where bees of American or Penna Italian strains are used, though with some Italian strains, especially those containing Cyprian blood, swarming prevents the working up of strong colonies for wintering.

Until comparatively recently the British black strains predominated in this country, but owing to the very low resistance of these bees to aca-

rine disease, due to the low prolificacy of the queens, they are becoming less popular, and are little in demand at the present time.

The great majority of the bees are now of Italian blood, and the

American strains are becoming increasingly popular, owing to their superior working qualities and to the ease with which the golden queens of these strains can be found. England.

THE CARNIOLAN BEES ✓

By E. F. Atwater

MR. FRANK BEACH, of Idaho, writes me, saying that he has difficulty in keeping up his number of colonies and still making a full crop of honey, saying, "Our difficulty here is wintering and getting the bees sufficiently strong for the first flow of alfalfa honey," and asking my experience with Carniolan bees.

Many have the idea that any change from the Italian race of bees is everywhere inadvisable, but there can be no question that excellent as is the Italian bee, there can exist conditions so unlike those met in the native environment of the Italians, that bees of some other race may produce superior results.

The Carniolan bee is native of a cold, rigorous climate, among precipitous mountains, and, when intelligently used in high altitudes in our country, may often reach a given honey flow stronger in numbers than most Italians, and then if not allowed to swarm indiscriminately, will produce a crop of honey that will delight the eye and the pocketbook.

In spring, if there be not too much unfavorable weather, the Carniolan bees require little else than a large hive and abundant stores, in order to build up for an early flow; though under exceedingly unfavorable weather conditions it is desirable to scratch combs of sealed stores, or feed, for stimulation.

The alleged excessive swarming propensities of the Carniolans have not been so evident with me, as even

our best Italians, in this immediate locality, are excessive swarmers, and the Carniolans are a little worse, because a somewhat larger per cent of them will be strong early in the season.

When I visit an apiary in fruit bloom and find a number of colonies preparing to swarm, I am pleased, for such preparation is the key to increased results, as every such colony of good stock, is divided up into all the nuclei which it will make. Such nuclei are placed in full-size hives, and these nuclei established and provided with an abundant field force. This is done either by moving from their stands strong colonies not preparing to swarm and putting these nuclei in their places, or, removing a strong colony from its stand, putting the nucleus in its place, minus a cover, then put on the nucleus a wire screen or wire screen escape board with the escape closed, and then place the full colony on top of the screen, with only the screen between, having a small entrance at the rear, for the upper colony.

When the flow comes, my perfected Demaree plan is used and such colonies, in any size hive, so long as they have abundant room, do not swarm, under our conditions, and give splendid crops, if the flow is good.

Some will object to this plan, as not all queens are reared from selected stock, but I do not practice this with inferior colonies, and a queen of average stock, reared in the apiary



The mating boxes are larger than the baby nuclei formerly used in the United States, but smaller than a hive.

and colony where she will remain, will produce far better results on the average, than queens of some alleged superior stock, which have come in the mails, or which cannot be ready, just before your flow; so that swarming can be controlled and a satisfied colony maintained through the flow.

For the production of comb honey, the Carniolan bee is in some respects ideal, as they readily store honey at a distance from the broodnest, readily enter comb-honey supers, gather somewhat less propolis than other races, and cap their honey with a snowy whiteness. In the alfalfa regions of the west, comb-honey colonies, which have been treated by any successful plan for swarm control, may go through the first flow with no further effort to swarm, and do splendid work; yet on the second flow, especially if crowded, there may be some swarming, unless treatment is given.

My own practice, with these bees, run for comb honey has been to arrange the colonies in pairs or groups of three, then when the flow arrives, move back the two or three colonies, and in place of them place a hive with a comb on each outside, a comb in the middle, and the remainder of the space filled with frames with full sheets of foundation, then find the queen which is youngest, from the colonies moved aside, and cage her at the entrance of the new hive.

On the new hive place two or more supers, one of which must contain a few bait combs, or be taken from some colony which is already at work in the supers.

Now shake into the new hive all the bees from the colony from which you had removed the queen, and add this brood to one of the other colonies which you had moved back, after destroying queen cells, if any, and release the queen.

You now have a colony, free from all brood, of great strength, as they have all the bees from the colony shaken and the field bees from the other one or two colonies moved back, and if the flow is good, they will surprise you with the amount of their production.

When practicing this shaken-swarm plan, it is best, if groups of colonies are about a rod apart, to avoid drifting, and if any should not settle down to work, then practice putting under each new colony so made, for two, or three days, an empty body containing no frames, so that the bees can, at first, form a big cluster, free from the dividing sticks and spaces in the hive proper. Two or three days later, remove this body and your colony will work like a new swarm, only much better than most natural swarms, as the bees are so much more numerous.

We often shake into the new hive, three-fourths of the bees from one of the other hives moved away, for still greater strength.

A shook swarm so made is ideal, for a short flow, but for a long flow they must be reinforced with bees or brood, as they will have no emerging bees for at least three weeks.

When shaking into ten-frame hives, at the next trip to the apiary, we usually take a quick look into each new brood nest, and if there should be one or two combs of honey, these we remove, and give full combs of emerging brood from some of the colonies moved away.

Such plans as these in localities which are bad for swarming, will enable a thorough beekeeper to make use of even a prolific swarming race like the Carniolans, but it is a fact that in some locations, even the Carniolans will be slow to build up, and with some beekeepers in the intermountain region, they prove about as near to non-swarmlers as the Italians.

The Carniolans are excellent queen cell builders and usually accept cells readily, in queen rearing, the queens

are usually large and prolific, and will seldom pass through excluders, even of the old square-opening type of many years ago, with their perforations far larger than used at present.

While the use of Carniolan bees, by some beekeepers, in some localities, may increase results and help to do away with the difficulties mentioned by Mr. Beach, yet no one should expect a very great difference, for so far as my experience goes, there is no such thing as a race or strain of bees very greatly superior to average good stock, and I say this, even though it does not tally with the advertised claims for some strains of bees.

Idaho.

THE TEMPERATURE OF THE BEE'S BODY

By Wallace Park
Iowa Experiment Station.

DR. BRUNNICH, of Switzerland, in the *Bee World* for October, 1922, and in *American Bee Journal* for April, 1923, has given data to show that "The temperature of the bee-body is independent of the outer temperature." Dr. Brunnich points out that his results agree with those of Cisielsky, a Polish investigator whose results were published in the Polish language many years ago, but were unknown to the rest of the world until now. Phillips and Demuth state (U. S. D. A. Bul. 93, p. 15): "The bee is classed as a cold-blooded animal in that the temperature of the individual bee is practically that of the surrounding medium." And Milner and Demuth (U. S. D. A. Bul. 988, p. 3): "The bee is similar to other cold-blooded animals in that it lacks the means for internal regulation of body temperature that are found in birds and mammals, hence the temperature of its body is affected by that of the surrounding air."

On the surface, the findings of Cisielsky and Dr. Brunnich appear to be incompatible with those of Dr. Phillips and his co-workers. In my opinion the discrepancy is more apparent than real, for although working along closely related lines, the two groups of investigators have been measuring the temperature of two different things. The U. S. Bureau of Entomology workers have measured the temperature of the medium that surrounds individual bees within the winter cluster, which in all probability is lower than the internal temperature of those individuals. Brunnich has measured the internal temperature of the individual bees, during spring and summer. The former workers measured the heat of a room in which there were many stoves; the latter measured the heat within the firepots. The conclusions that have been set forth are diametrically opposed; but is there any good reason why further investigation may not show the results obtained by the

two sets of workers to be in complete accord?

Data Insufficient

According to Phillips and Demuth (U. S. D. A. Bul. 93, p. 6): "When the temperature of a colony of undisturbed broodless bees is above 57 deg. F., and below 69 deg. F., the bees are quiet and their temperature drifts with the outer temperature." But do we know that it is the temperature of the bees that "drifts?" They state (Ibid. p. 2.) "Electrical thermometers are used by means of which readings can be made without approaching the hive, and the thermometers are, of course, permanently fastened in place." Within a compact cluster, the temperature recorded would tend to approach that of the bodies of the bees; but (Ibid. p. 5): "At temperatures above 57 deg. F. a compact cluster is not formed, but the bees are widely distributed over the combs." Under these conditions, the heat given off by the individual bees would be carried out through the hive entrance and crevices around the cover, by air currents. Hence, the temperature of the bees could remain constant while that of the air surrounding them would, of course, "drift with the outer temperature."

As cited above, Phillips and Demuth state, "The bee is classed as a cold-blooded animal in that the temperature of the individual bee is practically that of the surrounding medium," but they give no data on the temperature of individual bees. The records which they advance in this connection are hive temperatures and cluster temperatures, but these would vary with the outer temperature and the compactness of the cluster even though the temperature of the bees remained constant.

The fact that all other insects, so far as known, are cold-blooded is not a safe criterion, because honeybees differ from all other known insects in that (U. S. D. A. Bul. 695, p. 2):

"Bees cannot hibernate as do most insects." So far as is known to me, no records have ever been published which show that the internal body temperature of the honeybee fluctuates with that of its environment. Therefore, the classification of the honeybee as a cold-blooded animal apparently is not well founded.

The statements of the U. S. Bureau of Entomology workers clearly clash with those of Brunnich on the classification of the bee as a cold-blooded or warm-blooded animal. It is altogether possible, however, that neither of these investigators has as yet found the exact truth of the matter, as will become apparent from the following discussion of the terms under consideration:

Cold-Bloodedness Versus Warm-Bloodedness

According to Pembrey (Schafer's Text Book of Physiology, London 1898, Vol. 1, p. 787): "Those animals which are high in the scale of evolution, such as birds and mammals, have a high temperature, which is fairly constant and independent of the temperature of the surrounding air. The lower animals, on the contrary, have a temperature dependent upon and only slightly above that of their surroundings, and thus liable to considerable variations. This difference between the two classes is expressed by the terms 'warm-blooded' and 'cold-blooded' animals. The classification, however, is not absolutely exact, for there are mammals such as the marmot, hedgehog, bat and dormouse, which are in an intermediate position; in warm weather these animals have a high temperature, which is fairly constant and independent of their surroundings, but in winter they become inactive, they hibernate, and their temperature falls and varies with that of their surroundings. On the other hand, there are bees, animals of much lower order, which have and maintain a higher temperature than that of most cold-blooded animals, and are not reduced to spend the winter in a torpid state."

Many other examples of so-called warm-blooded animals that hibernate are so well known that further citations are unnecessary; but those cases in which so-called cold-blooded animals maintain a fairly constant temperature for considerable periods are not so well known. Pembrey (Ibid., p. 850) cites Davy (Researches, London, 1839, Vol. 1, p. 219), as having found the temperature of a fish known as the bonito (*Thynnus pelamys*) to be 97 deg. F. when that of the sea was 80 deg. F., and the tuny (*Thynnus thynnus*) is said to possess a similar high temperature. One of the most notable examples, however, is that of the female python when incubating her eggs. Investigations by Valenciennes (Compt. rend. Acad. d. Sc., Paris, 1841, tome 13, p. 126, Sclater (Proc. Zool. Soc., London, 1862, p. 365) and Forbes (Ibid., 1881, p. 960) are cited by Pembrey (Schafer, p. 849) to show that (Ibid., p. 865): "In

cold-blooded animals there are traces of the power of maintaining a constant temperature, as shown by the high temperature which a female python is able to maintain for many weeks when she is incubating her eggs."

Pembrey says (Ibid. p. 865): "It is possible to trace in the warm-blooded animals the gradual development of this power of regulation. Thus during the development of the chick there is first a stage in which the embryo responds to changes of temperature in a similar manner to that of a cold-blooded animal; then a state of transition in which there is a regulation for moderate changes of temperature; and finally, when a chick is hatched, the power of regulation resembles that of a warm-blooded animal." Would it then be strange or inconceivable that honeybees, standing as they do as the highest type of insect development, should have acquired the power to regulate their temperature? Let us consider the manner in which regulation of body temperature is accomplished.

Regulation of Body Temperature

The regulation of body temperature embraces two processes: regulation by varying the loss of heat; regulation by varying the production of heat.

The nervous system exercises a control over both the factors concerned in the regulation of temperature; upon the loss of heat by means of the respiratory center which controls the frequency and depth of respiration; and upon the production of heat through the nerves which control activity of the tissues, chiefly the muscles. It is not to be inferred, however, that heat is produced in muscles only during activity, although Milner and Demuth apparently believed this to be the case, for they say (U. S. D. A. Bul. 988, p. 1) that: "The generation of heat to warm the winter cluster is solely by muscular activity." But the work of a number of investigators is cited by Pembrey (Schafer, vol. 1, p. 841) to show that "The muscles during apparent rest are in a state of tone, and are the seat of an energetic combustion, and therefore of heat production." The case of the female python, to which reference has already been made, is further evidence of this fact, for Pembrey states (Ibid. p. 850) that "the female (python) took no food and little exercise for many weeks before and during incubation."

Being such a small animal, the bee does not require extensive means for lowering its body temperature, as is the case with man and the larger animals. Loss of heat by radiation and conduction in an animal is proportional to the surface of its body and inversely proportional to its mass. If the dimensions of a body be increased from 1 to 2, the cubic content is increased from 1 to 8, while the surface is increased only from 1 to 4. Hence a small animal has a far greater surface in relation to its weight than a large animal, and it

must have either special means for preventing an excessive loss of heat; or a more rapid production of heat if it is to maintain its temperature at a similar height. I believe both means are employed by the bee.

The special means employed by the honeybee to prevent excessive loss of heat is the formation of a cluster from which the loss of heat is regulated by varying its compactness.

It has been shown by many investigators (See Schafer, Vol. 1, p. 720) that the intake of oxygen and the output of carbon dioxide are relatively greater in small than in large animals. Rubner (Ztschar. f. biol., Munchen, 1883, Bd. 19, S. 535) calculated that the tissues of a rat produce over five times, and the tissues of a sparrow thirteen times as much heat as the same weight of tissue in a man. It is not surprising, therefore, to learn (U. S. D. A. Bul. 988, p. 9) that the heat output of a honeybee in the winter cluster under favorable conditions is greater per unit of weight than that of a lumberman working hard in the northern woods in a cold winter.

In regard to the regulation of temperature by means of varying the production of heat, Newport (Phil. Trans., Royal Soc., London, 1837, p. 296) gives detailed data to show that bumblebees possess "a voluntary power of generating heat," which implies the power of regulating the amount generated. There can be little doubt that the honeybee has developed this power to a still greater degree. The nature of the bee's food, the presence of a honey sac in its body, and the habits of honey storage, remaining in the shelter of the hive and clustering in cold weather, all point to the necessity for maintaining a body temperature which is considerably higher than that of its environment, much of the time, at least. In its honey sac it is able to maintain a constant supply of heat-producing food. Honey contains little else besides invert sugars. These require little or no digestion before being taken up by the blood and they combine directly with oxygen in the tissues, resulting in the production of heat without much, if any, delay. In all probability, the bee is able to vary heat production simply by regulating the flow of food from its honey sac.

On the other hand, there are insects, such as infest stored grain products, which, although they have a constant food supply, are nevertheless unable to regulate heat production by varying the quantity of food ingested, because their food becomes available for heat production only after a considerable process of digestion has been accomplished. Hence, when once their body temperature drops, they are unable to continue digestion, and hibernation is their only means of salvation. But the food of the honeybee is such that the generation of heat may be increased on short notice.

A single bee, on account of its small size, has little power to retain the heat generated when exposed for any considerable time to temperatures below about 45 deg. F. Such

a temperature probably is as severe for the bee as a temperature of 45 deg. F. below zero would be for a man, and unless man uses proper means for external protection (clothing) he is not able to keep up body temperature under such conditions any better than the single bee at its correspondingly low temperature of say 45 deg. F. above zero. I have observed bees in early spring going out and returning soon with loads of water from melting snow when the temperature of the air was 33 deg. F. As the water carried was about 32 deg. F., those bees must have generated heat quite rapidly to withstand the cooling effect of the water as well as that of the air.

The ability of clustered bees to generate heat quickly has often been demonstrated by observing the rapid rise of the cluster temperature after rapping on the hive. Since this is true of the cluster as a whole, single bees are, no doubt, capable of producing heat rapidly, whether in or out of the cluster. Their small size, however, renders them unable to maintain for long, outside of the cluster, a production of heat equal to the loss at temperature below about 45 deg. F.

In the light of the above discussion, it appears very probable that the honeybee is endowed with ample means for regulating its body temperature so long as the bee remains within the normal environment, which, during times of low temperature, involves the protection afforded by the hive and the cluster. Its temperature-regulating apparatus may be of little value when the individual is subjected to temperatures below 45 deg. F.; but neither would man be able to regulate his temperature at the North Pole without the protection of clothing.

Summary

1. A more complete investigation may show the results obtained by the U. S. Bureau of Entomology workers and those obtained by Brunnich to be entirely compatible.

2. Data published by the U. S. Bureau of Entomology workers cannot be compared directly with that of Brunnich because they do not cover the same points. And so far as is known to me, no records have ever been published which show that the internal body temperature of the honeybee fluctuates with that of its environment. Therefore, the classification of the honeybee as a cold-blooded animal apparently is not well founded.

3. Exceptions to the general rules for the classification of animals as cold or warm-blooded are sufficiently numerous and of such varying character that it is not beyond the realm of possibility that the honeybee is neither strictly one nor the other, but may occupy some intermediate position.

4. The nature of the bee's food, the presence of a honey sac in its body; and the habits of honey storage, of remaining in the shelter of the hive, and of clustering in cold

weather, all point to the necessity for maintaining a body temperature which is considerably higher than that of its environment much of the time, at least. And it appears prob-

able that within the ordinary temperature limits of its normal environment, the bee is able to regulate the temperature of its body.

HOW CAN WE INCREASE OUR COLONIES WITHOUT DECREASING OUR HONEY CROP?

By J. E. Crane

ONE of the provoking things with the old method of increase was that when you had a colony built up strong enough to begin work nicely in sections, perhaps the first pleasant day out the bees would pour with a rush and a roar, and your super was deserted, and work suspended. In ten or twelve days, your colony will again become strong enough to go into supers when perhaps a second swarm will issue, or the clover begin to dry up, and before your sections are finished the season is over and you have little to show for your care but your increase and some unfinished sections.

It has seemed to me a better way early in the season to make one choice colony very strong, either by extra feed or giving it combs of hatching brood from other hives or both, for rearing queen cells. Then about the time alsike or white clover begin to bloom, or before if your colonies are strong enough, start a good supply of queen cells. When these are about ready to hatch go to your strongest colonies and take out a comb of hatching brood with bees enough to care for it—yes, twice as many, for half of these may go back. The next day you can give these nuclei a maturing queen cell. I forgot to say you should put the brood comb into an empty hive at one side and beside it place a comb with plenty of honey, and outside of this comb of honey a division board or an empty comb. An empty, dry comb makes a very good division board. In ten or twelve days the nuclei, or a large part of them should have a laying queen and enough young bees hatched to care for more than one comb of brood, and if you are running for section honey, a good many of your strongest colonies will be starting queen cells preparing to swarm. If these are very strong all their brood can be removed and divided among your nuclei, giving each one as much brood as it can care for, which is usually not more than one or two combs. If you find a colony not yet strong enough to spare all its brood combs and yet is preparing to swarm, we often take out two or three combs of brood and remove all queen cells, which will, in many cases, lead the colony to give up swarming for the season.

As the season advances we build up these nuclei with brood and dry combs or comb foundation, as we have them to spare.

We do not make it a rule to start

as many nuclei as we want, for we often find it convenient to remove a queen with one or two combs of brood with bees enough to care for it, to keep the colony at home, or it may be, we take out one or two combs with a well developed queen cell and with them start a nucleus. The removal of one or two brood combs from a strong colony does not seem a great loss, as the queen will quickly fill the new combs with eggs and brood that will take the place of those removed in the center of the brood chamber. You can sometimes remove twenty or thirty brood combs during the season from a hive and it will remain a strong, vigorous colony. These nuclei that are started early in the season will often, if the season is good, become strong enough to store considerable honey and make the very best stocks for wintering before the close of the season. One must be guided in the amount of increase by the season. Some years very little increase can be made safely, while in others a large increase can be made without interfering with a good or large crop of section honey. I have thought that in a good year an increase of 50 per cent could be made and get as much section honey as where no increase was made.

Where a yard is run for extracted honey conditions are different. Where a colony is given a large brood chamber and an abundance of super room with drawn combs, it can be kept contented to work on although it becomes very populous, with little disposition to swarm; while when we are seeking for section honey, we find it advantageous to restrict the size of brood chamber and super room, for 50 well finished sections are of more value than one hundred half filled. At the close of the harvest, or clover bloom, we have very large colonies when run for extracted honey with hives well filled with brood. As there is little honey in the fields to be gathered, this excess of bees is of little use except to consume the honey gathered earlier in the season. So we would not start nuclei so early as when making increase from colonies run for section honey; but, say three weeks before the close of the flow of honey that we may have an abundance of laying queens before the season closes. Then, with queens and nuclei and colonies running over with bees it is a comparatively easy matter to build up our nuclei very quickly into strong colonies.

It is better to do it just before the close of the flow of honey to prevent robbing. If we can buy good queens at reasonable prices we can dispense with nuclei and divide our strongest colonies and give the queenless part a laying queen, or, better still, take away the old queen and give both young queens. Both colonies should be well supplied with honey. If the division is made in July there is ample time for both to build up strong for winter.

In practice these rules are modified or altered to suit circumstances or conditions as may seem best, at the time. For instance, we may find a colony trying to supersede a choice queen and it may furnish a lot of the best queen cells, and we are led to use them for the rearing of queens and starting nuclei earlier than we otherwise should.

Success will depend very much on the skill of the beekeeper.
Vermont.

WHAT DO BEES DO WITH BROOD CAPPINGS?

By Bruce Lineburg

THERE are about 264 square inches of surface to each standard Langstroth comb, counting both sides. A ten-frame hive, therefore, contains approximately 2,640 square inches of surface. Assuming that the queen is laying eggs fast enough to keep the comb of such a hive just half full of brood and eggs; it follows that the workers must cap half of the entire surface of the combs, or 1320 square inches, each brood cycle (21 days). Estimating the cell walls, which are not torn down, at one-tenth of the surface of the comb, it follows that the workers must construct 1,188 square inches of cappings and later, with the help of the emerging bees, they tear down an equal amount of cappings each brood cycle.

These cappings, if joined into one piece would form a sheet containing more than eight square feet of material. What is done with all this material; and where did the bees get the material to form such a structure in the first place? Answering these questions makes clear an interesting bit of economy practiced by the bees but which has been overlooked up till the present.

The capping operation for a single cell often extends over a period of twenty-four hours or even more before the task is finally completed. During the last day preceding the closing of the cell the nurse bees may be seen alternately feeding a larva or working at the edge of the cell which surrounds it. Capping work under these circumstances proceeds very slowly so that a full day after such operations are begun a thickened rim is noticed about the entrance to the cell.

Capping for the most part seems to be done by two workers working alternately at the cell and then at nearby cells from the walls of which they bite off tiny particles, and returning they use these particles for capping material. Occasionally there are three and sometimes even four or more bees working at a single cap. The space for working is so limited, however, that only at the beginning of the work can two bees work at the same time; even then they interfere with each other. Later on all work is done alternately. As

the work nears completion the working bees always increase their efforts, jostling and crowding each other, apparently seeking to complete the job as soon as possible. Usually about half of the cap is made during the last thirty minutes.

It appears that the bees continue to feed the larva as long as there is space left through which to thrust the head. Once the space is too small to allow the passage of the head all efforts are bent toward capping and the work is brought rapidly to completion. Each bee does but little work at each visit, but twenty or thirty visits are made within a period of ten minutes.

As stated previously, capping material is taken from the edge of nearby uncapped cells and from just inside such cells. But what is the economy of partially tearing down several cells in order to cap another? The answer is that tearing down at one place to build elsewhere is not economical under these circumstances. More than this, cell walls are made of pure wax while caps are not. Since speculation appears to fail, let us watch the removal of a number of caps, perhaps this may throw some light on the subject.

Emerging bees sometimes do the entire work of cutting the caps and thus emerge uncapped. In other cases workers may be seen pulling at the cap from without while the enclosed bee is working from within. The worker on the outside, after removing a bit of the cap, turns to some cell nearby where the bit is deposited just within the cell or is stuck on the rim of an uncapped cell, or it may even be stuck on the cap of a sealed cell. Bits thus placed on caps are not sufficient in number or amount to affect the porosity of the cap to the point where they are detrimental to the enclosed larva or pupa. In other words, a worker aiding a bee to emerge simply places the material it removes at convenient points about the comb where it may be readily obtained for capping the same or other cells at some future time. In case the emerging bee cuts its way out uncapped, then the frayed edges of the cap, for the most part, remain attached to the rim of the cell. These frayed edges of the cap are later re-

moved by the workers, leaving the rim of the cell slightly expanded, a characteristic which may be noted in all normal cells. The disposal of this material is similar to that previously described when the worker aids an emerging bee. But what about the material removed by the emerging bee? This point is not so readily answered, since the emerging bee cannot be seen in all its activities as can the worker outside the cell. After a hole is made in the cap the behavior of the emerging bee may be partially observed. It is seen to pinch off tiny bits of the cap and work them over between its mandibles. Sometimes it appears to be eating, but at other times it may be seen that this bit of cap after considerable chewing is stuck to the cell walls just inside the entrance to the cell. Bits of material thus placed may be seen readily by examination of cells from which bees have recently emerged. This material is most noticeable in the corners of the cell and may be seen under the binocular or even with the unaided eye.

In order to ascertain whether the emerging bee eats any considerable portion of the cap the alimentary systems of a number of bees were examined just after they had emerged; others were examined just as they began cutting the cap. In all cases but very little difference in the contents of the alimentary system could be noted. Caps were then stained with eosin and upon emergence the alimentary tracts of the bees from these cells were examined. Only slight traces of the eosin could be found. It therefore appears that only a small and soluble portion of the cap, if any, is eaten, and that a considerable portion of the cap is pasted against the sides of the cell where it may be used again for the capping of the same or other cells.

That capping materials are conserved and used again and again for the same purpose is further substantiated by general observations which any beekeeper may make, namely, that the caps of all brood in hives containing old darkened combs are nearly as dark as the combs themselves. On the other hand, the caps of all brood in hives swarmed on white combs or foundation are but slightly colored.

If capping materials were procured outside the hive and used but once then it follows that all colonies using such materials would produce caps of approximately the same color, regardless of the age of combs in use. On the other hand, if the edges of the cells are removed and used for capping material and the caps themselves removed from the hive or eaten when they have served their purpose once, it follows that the edges of the cells in old combs would be lighter in color than the remainder of the cells, since the edges must be replaced by new wax. But neither of the above assumptions hold, since the results which must follow them are contrary to the facts which any beekeeper may observe.

Still a third point may be consid-

ered, namely, the composition of the caps. These have been shown to contain wax, bits of cocoon, and also traces of propolis and pollen. Of these only pollen is used by the bees as food, since bees starve to death in hives containing the other three only, yet show no signs of eating either of them.

It follows, therefore, from a consideration of all the facts presented that the materials composing the brood caps are taken largely from the combs themselves and that a large

part of this material, perhaps all of it, supplemented by some additional bits of cocoon, is replaced on the edges of nearby cells where it is convenient for similar use at some future time.

Maryland.

(Surely, not all the material contained in the cell caps is used, for we have often brushed away some of this material from the hive stand. It is usually swept to the corners of the bottom board by the workers.—Editor.)

MARYLAND BEEKEEPERS BY THE WAY

By Ernest N. Cory, State Entomologist, College Park, Md.

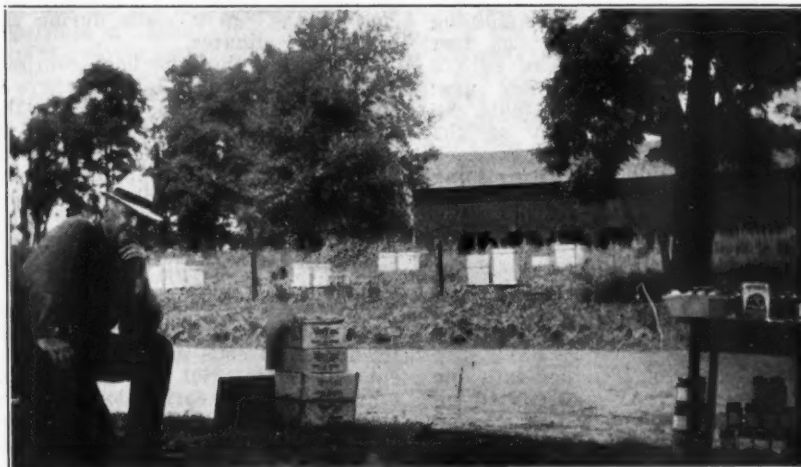
WHAT Maryland lacks in large areas of honey plants is made up in a large measure by her strategic position with regard to markets, and particularly the market within her own borders for a considerable quantity of honey. Within a radius of four hundred miles, Maryland taps an urban population that can consume all her honey and other products. In this day of direct marketing by parcel post and roadside selling, the position of "Maryland at the Hub," so to speak, enables her to put her products on the market to a decided advantage. Maryland has, moreover, about seventeen hundred miles of improved roads, many of which are traversed by thousands of tourists daily. A large percentage of the tourists from the West come over the western pike, and the trail from the north to the south and return must pass through Maryland.

Maryland as a beekeeping state does not compare favorably with the big producing states because it has no very reliable honey flow, except in the Piedmont section, where the tulip is abundant. Even this source of

nectar is fast disappearing, owing to the demands for tulip wood. One's recollections of childhood in Maryland are sure to include the remembrance of days spent in the tulip trees

stripping the petals from the blossoms and sipping the nectar, that nature lavishes so abundantly there. No plant exceeds the tulip in the amount of nectar that is secreted in a comparatively short time. The only difficulty with this source of supply is that it probably requires better beekeeping to secure the full flow from tulip than is required to secure the surplus from any other honey crop in temperate America. This is due to the fact that the flow comes early in May and it is a difficult task to have bees at the peak of brood-rearing in time to gather the nectar. In order to be ready for this particular flow young queens in the fall, ample stores and adequate winter protection are necessary.

Brood-rearing normally starts very early in Maryland, as even in February we frequently have sources of pollen supply and days suitable for flying in the central, eastern and southern sections. Of course, the



Roadside selling in Maryland, opposite one of Nusbaum's apiaries.



The black locust furnishes a good yield of nectar for a short period. Since the flow is short there is little time for preparation of the colonies after it begins.

brood-rearing in the higher altitudes of the western part of the state is retarded by the longer winter. Maple, willow and chickweed yield the early supplies for the colony upbuilding.

That there are tons of nectar that are never collected is true for this state, no doubt, as well as for other states, but Maryland is a state of farms and should have more bees by far than it has at the present time. Good beekeeping will certainly pay well in any section of Maryland, as attested by the results achieved by those who give their time and thought to the work.

Honey Hill Farm! Doesn't that bring before your mind a bee enthusiast? Honey Hill Farm is in the central part of the state on the Piedmont Plateau, where there was an abundance of tulip, but which has now been replaced by fruit trees and farms with a natural growth of clover everywhere. The farm is owned by Rockwood Nusbaum, who has six beeyards, one at Honey Hill and the others on various farms, particularly in orchards in the neighborhood. Extracted honey, mainly from white and alsike clover, is the goal in these apiaries.

Nusbaum is a young college man who has been keeping bees since he was 12 years old. His bees paid his way through college and now he is making a good living and laying aside something for the future by his activities in connection with beekeeping.

As is usual in Maryland, clover yields a good crop of honey about one year in three, but it yields some each year. In order to take care of his trade, and, let me tell you here, it is an extensive trade, Nusbaum buys to supplement his stock. Direct sales are depended upon by this progressive beekeeper, and annually his



Harold L. Kelly secured a yield of 200 pounds surplus from his best colony in 1920.

automobiles loaded with honey may be seen along the principal highways, dispensing honey to the traveling public. The parcel post is also used to a good advantage in his direct sales campaign.

At Forest Glen, just outside of the Nation's Capitol, in a strictly tulip section, Harold L. Kelly now conducts his apiary where formerly Miss Hannah Sewall conducted the Beechbank Apiaries. Miss Sewall made a good living with her bees, but Mr. Belling came along and decided it was time for Miss Sewall to change her name and vocation; so Kelly bought out the Beechbank Apiaries, which now number about eighty colonies, and in addition he operates another apiary of about seventy-five colonies, located in the city of Washington and owned by Dr. F. S. Nash, a famous surgeon and a prince of good fellows, who keeps bees since his retirement from the navy in order to keep out of trouble and retain his youth.

Kelly runs for extracted honey, building up his bees early for the main honey flow—tulip—supplemented in good years by clover, locust, sumac and fall flowers. In addition to keeping bees Kelly works in the Government service, so Sundays, holi-

days and vacation time is all that he gets to keep up his work with the bees.

S. G. Crocker, Jr., is one of the largest producers of extracted honey in the state. He is also a producer of queens and sells bees so that his production is sometimes cut down by the selling of package bees. He has several outyards, and in addition takes care of the bees for several fruit growers who appreciate the need for bees in the pollination of their orchards, but who are too busy to give the attention that they require.

Crocker has been in the beekeeping game about twenty years and has gradually built up to approximately three hundred colonies by the slow process of making the bees pay for equipment. This is a sure way, but slow, and if money can be borrowed after the beekeeper becomes thoroughly conversant with his bees and his locality, it would be a much easier road to follow. Mr. Crocker's bees

are in seven yards, and his experience is that not over fifty colonies to a yard should be kept for best results.

Crocker is an advocate of single-walled, ten-frame hives, two bodies to the colony for wintering, with partial packing of leaves somewhat after the Dadant method, supplemented by a good windbreak.

Chas. F. Baile, President of the Maryland Beekeepers' Association, is in the main a producer of extracted honey. His first adventure in beekeeping was in 1912, with a stray swarm. The next year he paid a hundred dollars for fourteen hives and made eighteen dollars above all costs of the transaction. He now has over forty colonies and manages to make a fair crop each year, as he is in the central farming belt, where clovers do best. In several years Mr. Baile made one and a quarter tons of first-class honey from four hives. Of course, his average is nothing like that, but merely indicates what can be done in a good year.



Tulip-poplar is an important source of honey in Maryland. Since it blooms early it is only the good beekeeper who makes the most of this crop.

N. W. Saunders, who lives a short way out from Washington, has been keeping bees for thirty years. About one year in three he gets first-class white clover honey, but each year he makes enough honey so that his average is very good and he is able to keep his customers supplied with honey. He markets his honey at a stand in the Riggs market. His apiary averages from seventy to eighty colonies of bees each year.

Mr. Saunders is one of the old school of beekeepers, with a wide experience. He has passed through and seen the changing fashions in hives; the development in methods and stands every ready to give his assistance to the new generation.

Ernest Hearn, of Salisbury, might be spoken of as an itinerant beekeeper in so far as the location of his bees is concerned. Wherever he can find a suitable location in Wicomico County he secures permission from the owner of the property to establish an apiary there. Sometimes the owner is very glad to have the bees there with no charge; at other times Mr. Hearn pays a rental for the location, but he finds it profitable and manages to make a crop each year from clovers, wild legumes, and to provide his bees with winter stores from the abundant supply of fall flowers.

There is one member of the Beekeeper's Association who temporarily has his bees in Virginia. No doubt it is only a matter of time and opportunity before he again turns to Maryland, as nearby Virginia has no advantages over Maryland from the standpoint of honey flow, and certainly it is a whole lot easier to travel the roads of Maryland than those of Virginia. Maryland's example, however, is proving good, and with a Maryland road engineer, Virginia may soon expect to take the place in road mileage that her wonderful country warrants.

George Harrison, Instructor at the University of Maryland, and a Marylander by birth, has his bees at Blue-ment. He has been keeping bees for nine years and for the last two years has kept seventy colonies of bees at his present location. His chief source of surplus is locust, tulip, persimmon, sumac and horsemint. He is a great advocate of young queens, ample winter stores and winter protection. He is still experimenting with different types of winter protection and as yet has come to no conclusion with regard to the best for his section. He is a mechanic of no mean ability and has developed a number of interesting devices for simplifying his work. At present his chief contribution to beekeeping consists in training the disabled soldiers who are here for rehabilitation. His success as a teacher is attested by the many ex-soldiers who are keeping bees as part of their source of livelihood.

There is a younger generation growing up who are contributing

much to the success of beekeeping in Maryland, but in most instances they have started out as producers of comb honey and now produce both comb honey and extracted honey. Sooner or later these young men de-

cide whether they want to keep bees for comb or extracted honey product, and then go into the game for all it is worth. These men will be the ones who will make interesting stories in the future.

MILLIONS OF HONEY AT OUR HOUSE

By E. M. Cole.

I WAS familiar with the above slogan in the spring of 1921, but I failed to grasp all that lay back of it, and that failure caused me to lose a large part of that year's honey crop.

After a mild winter, an early spring opening March 15 found my bees in fine shape as to bees and brood, and a fair supply of stores.

March weather proved bad and the bees got little help from the bloom of maple, box elder, etc.

The bees were unpacked and each colony wrapped in tar felt, folded closely over an inner cover.

On April first the bees had a flying start of 5 to 6 frames of brood, but getting low in stores, so an empty comb-honey super was placed on each colony, a hole cut through the tar paper, and a 2½-lb. slip-top honey can used as a feeder.

We had a good deal of freezing weather all through April, destroying most of the tree bloom, and few days were warm enough for bees to get much from dandelion.

So each day bees could not fly they were fed a pound of syrup, half sugar and half water.

On May first an examination showed five to six frames of brood in each colony, and, as near as I could determine, about the same strength of bees as on April first; no apparent gain in bees or brood in thirty days.

Worst of all, the bees were destitute of stores and living from hand to mouth, but apparently they had enough to feed and mature the larvæ.

May was dry and cold and but little could be harvested by the bees, so every day each colony was fed one pint of syrup.

A close watch was kept and there was not a single instance of chilled or starved larvæ thrown out.

An examination about May 30 showed five or six frames of brood and about the same force of bees that they had 30 and 60 days before.

Warm weather and a honey flow came with a rush about June first, and instead of a double body pretty well filled with brood and running over with bees, I had about the same force of bees and brood I started with weeks before.

I began to see something behind that "Millions of Honey at Our House."

We are taught, and taught truly, that if we raise our queen bees under such conditions that while in the larval form, the proper degree of heat is not kept up or they are stinted in food, they are longer in emerging

from the cell, weakened in power and their life is much shortened.

G. M. Doolittle tells of queens raised under such conditions and living only 6 to 12 months, not one-third the average queen's lifetime.

We are also taught that when the queen is removed from a colony, the bees select young worker brood and by a change to richer food and enlarging the cell they rear another queen; but this is not quite true.

The truth is (although it has rarely appeared in print), that all brood known as worker brood while in the egg stage, is queen brood, and any of these eggs are potentially a queen, and when they hatch the larvæ are queen larvæ, and they are on the road to royalty for from 36 to 72 hours, the length of time depending on the abundance of food given them at this early stage.

At this point if a queen is needed the larvæ are selected and are given an abundance of the same food, and a cell large enough in which to develop.

And at this stage the balance of the larvæ are changed to worker brood by the simple process of changing their food to a poorer quality and limiting the quantity to just enough to develop the bees to the worker stage.

So the change is always made from queen to worker brood, and even if placed in a cell larger than worker size, the quality and quantity of food is such that they will only develop into worker size.

A worker bee is simply an undeveloped queen, and any condition which would impair the powers of a queen, cause her to be longer in emerging from the cell and shorten her term of life, must have the same effect on her undeveloped sister queens.

It is evident that my bees, in order that none of the brood would perish, must stint each larvæ to the limit, divide each drop of food so that all might have enough to barely keep alive and slowly develop; and with not one extra drop for fuel to keep up an invigorating and growing temperature, the bees were long in emerging from the cells, and matured into weak and short-lived bees; dying so quickly they were barely able to keep their numbers even.

But if I had given them a bank account of 10 or 15 pounds of syrup, some capital to do business with, and tide them over the lean days; if they had had "Millions of Honey at Our House," every baby would have been well fed and nourished, with warmth enough to develop in normal time

into a strong and vigorous worker, with the vitality and length of life to nurse and bring on more of its kind, and I would have gone into the harvest with hives overflowing with bees and oncoming brood enough to back them up.
Iowa.



Prof. A. V. Mitchener, of Manitoba.

BEES AT MANITOBA COLLEGE OF AGRICULTURE

The Province of Manitoba has developed within a generation from a vast stretch of virgin prairie, little known except to the hunter and to the Red Man, to a wonderfully rich agricultural region. The soil of Manitoba is fertile, her climate rigorous and her people enthusiastic.

The College of Agriculture, located just outside the city of Winnipeg, is new, having been established but a few years. The buildings and grounds are attractive and efficient and well-known men are on the staff.

Prof. Mitchener, who has charge of the beekeeping along with other entomological work at the college, is very optimistic over the future of beekeeping on the Canadian prairies. The short, intensive seasons are favorable to wonderful honey flows. With the extension of the acreage of sweet clover in rotation with small grain, the possibilities of honey production are rapidly expanding.

The college apiary shown in the illustration on this page is used for both experimental work and teaching. Prof. Mitchener finds some serious problems which must be solved for this cold and windswept region, chief among which is the best method of wintering.

In co-operation with Mr. Floyd, of the Department of Agriculture, Prof. Mitchener recently held a very successful short course, the first beekeeping short course held at the college. Beekeeping is now a regular

feature of the work. We are pleased to present a likeness of the professor, since we expect our readers to become more familiar with his work in the future.

EUROPEAN FOULBROOD

Feeding B. K. Disinfectant to the Colony in Syrup Much More Successful Than Spraying.

By the Originator

It was my intention not to make any public statement on my method of treating European foulbrood until the proper or best way of treatment had been worked out, but the reports appearing from others who had been partially informed of my success led me to write about a year ago, in this journal, of the results so far obtained.

Three years ago (1920) I had about 50 colonies left, out of 100, every one diseased, and did not produce a pound of honey; also had about 2,000 combs that had been used on diseased colonies. The past season I had 70 colonies, spring count, on the combs, free of disease (although it was present in every direction from 200 yards up) and produced an average of 150 pounds to the colony.

No other method of treatment than what I have described was used, and the results obtained, I submit, are pretty good evidence that it was successful.

Some increase was made the past season on combs that had not been sprayed and the results were intended to be included in this article, but noticing a statement in another journal that the foulbrood germ dies in about a year (this is the substance, but not the exact words), I have concluded to leave the matter over for another article. I have made five different and careful experiments to test this question. However, the statement is ridiculous, absolutely untrue, as I will abundantly prove, with witnesses if necessary.

All of the colonies and combs used were carefully sprayed, two to three ounces to a gallon of water for bees

and four ounces to gallon for combs, being sure that all diseased sealed cells were open. I have a few times taken diseased combs fresh from the hive, sprayed them and put nuclei on them without any infection; but beyond satisfying myself that this disinfectant possibly destroyed the foulbrood germ, there were many things to be overcome to make the method successful, except to a few persistent and careful beekeepers.

It was impossible to spray in cold and wet weather. Advanced cases required to be sprayed three or four times, or until every sealed cell had been opened, and it was useless to spray weak colonies, as they at once deserted the brood and moved to the side of the hive. Also, very strong solutions destroyed the eggs but did no harm to the hatching brood or bees. The danger of infecting clean colonies by robbing, during spraying, except with the utmost care, was very great.

Except for empty combs I do not now advise spraying. I might say that some of these combs were slowly immersed in the solution so as to allow every cell to be filled, and kept there 15 minutes. I am inclined to think that dipping is the surest method.

During the winter of 1921-2 I decided to try feeding the disinfectant instead of spraying. I soon found a few infected colonies in the early spring and commenced feeding, starting with one ounce to one quart, half and half sugar and water, disinfectant was increased in amount a half ounce each time feeder was filled, until 2½ ounces were used, which seemed to be about the limit of amount to be used.

Careful note was taken of each colony at the time the feeder was put on; at the end of three days they were again inspected and I decided there was no new infection; later inspections were made at the interval of three or four days, and each inspection showed improvement, there being no fresh infection until at the end of 21 to 24 days the colonies were positively clean of every sign of infection and produced clean, healthy brood. During the spring about 20



Manitoba offers good opportunities to the beekeeper and the College of Agriculture is preparing to assist the beekeeper in solving his problems. This is the experimental apiary where the work is done under direction of Prof. Mitchener.

colonies were successfully treated for my neighbors (and three of my own, of which more hereafter), and in every case there was a rapid and complete cure. Every colony was a good storer during the season following.

I have also fed back honey from infected colonies, one-half water and 2 ounces of disinfectant, without a single case of infection, and in every case where the disinfectant was used the queen laid better than ever before, particularly was this noticed in infected colonies. There are also many other advantages in using this disinfectant in every case where stimulating feeding is practiced. A few of these are:

One ounce to the quart is fine for nuclei or queen mating hives, as the odor expels robbers, but is not noticed by the inmates of the hive. It is non-poisonous and is surely a great stimulant. Feeding can be done at any time, regardless of the weather, and the syrup will not sour or ferment, as it will in cans. My cans will go to the scrap heap, as I have thrown away enough sour syrup in the past to have paid for glass jars many times over.

Whoever advises or uses tin cans for feeding has not yet learned how to feed bees.

My feeder was made as follows: For quart size take a block 6 inches square, one-half inch thick, cut a hole in the center large enough to take in the head of the jar with 2 or 3 thicknesses of cotton tied over the top of jar. On one side of the block nail strips three-eighths inch thick by about one-half inch wide, around the margin of the block. This makes the bottom side of the feeder with a bee space under it. Nail two strips about one-eighth by one-half inch across the opening, on the under side of the feeder to carry the weight of the jar. Put a sack or mat on the top of frames, cut a hole in it; put the block over it; quickly invert the jar over it. Of course an extra super must be put on for protection, and then the cover. I have used quart jars so far, but in future will use two-quart, so the feeder will have to be proportionately larger. Don't use metal feeder, as it neutralizes effect of disinfectant.

Any colony that has enough bees left to cover two combs, and a fair queen (I don't care how badly the combs are diseased, or whether they are black, brown or yellow breed, or hybrids), can be cleaned up of European foulbrood and do as well as any swarm of the same size that never had disease. Some of the colonies I treated were a low grade of hybrids with poor old queens; the cure was complete, but of course, slower.

I thank you, Mr. Editor, for this space, and may the American Bee Journal prosper as never before, and I assure you that in a 5,000-mile trip through Oregon, Washington and California, spending my time among beekeepers for four months, I found more American Bee Journals in circulation than all other bee publications in our language put together.

W. H. Lewis.

Edmonds, B. C.
Feb. 26, 1923.

N. B.—Don't use "home-made" disinfectants. I tried it. They cannot be made of standard or uniform strength, as at the laboratory.—L.

THE HUBER LETTERS

How Bees Repair and Consolidate Their Combs to Prevent Them From Breaking Down

May, 1830.

We were examining, one day, Burnens and I, some hives of different forms and dimensions, but which were all thoroughly glassed and transparent. The works of the bees, of the greatest regularity, and especially the cells of the first row, drew our attention. The perfect transparency of the ceiling of the hives, to which the combs were fastened allowed us to see that they contained no honey; a little pollen only filled the cells on both sides; the lower cells were occupied as cradles for eggs, larvæ or nymphs. The greatest order reigned.

At that date, the hives were not entirely filled with combs, but in view of their number the weight which had to be sustained by the cells of the first row (upper row) must have been considerable, 10 to 20 pounds is surely not an exaggeration.

If we follow with attention what happens to the cells of the first row, we will soon see that, fearing their want of strength, the bees do precisely what is necessary to give them as much as is required to sustain the weight that these fundamental cells support. This precautionary work renders them unrecognizable. These filmy wax cells change into heavy and shapeless pillars: Reaumur, who had seen them only in this last condition, called them the braces of the combs, a name which, owing to their changed condition, fits them perfectly. The workers continue to add propolis to the wax in the lower combs, but in less proportion and without altering their forms and their dimensions. I have given elsewhere the details of this simple and useful operation.

First Observation

In December, 1795, I took advantage of a fine day to visit the colonies which had been brought with me by boat from Geneva to Lausanne and to make sure that the trip had not disarranged the bees nor their combs. Among those hives, some were glassed; those of which Reaumur has given description interested me most particularly; it was in them that I had been able to read the first pages of the natural history of bees and secure a just idea of it. Some had been stocked in the spring of this same year, others were the homes of older swarms. Thanks to Burnens' carefulness they had all arrived safely.

The finest or strongest one of my swarms had been for two years in a cylindrical bell-shaped hive. As bees cannot hang properly when they are gathered under a glass surface, I had wanted a better support for that

swarm; triangular strips of wood, narrow and properly spaced, had been glued under the glass which served as ceiling to this hive. The workers, finding in these strips a surface more suitable to penetrate than the glass, grasped them with their claws and fastened themselves to them so firmly that their weight could not pull them down when they choose to be hanging together.

This hive was almost entirely filled with wax and honey when we examined it at the end of autumn. The temperature of the season keeping the bees from coming out, they had gathered in the upper part of their home. The thermometer of Reaumur, the bulb of which was in the center of the cluster, indicated 22 deg. (82 deg. F), the one which was outside was under 3 deg. (39 deg. F.) at the same time. The humming of the bees appeared to me to be about as loud as it is in a better season; it was, in fact, produced by the same number of breathing bees.

As the cold had kept the bees in the hive, those that died daily when they had reached the term of their life, that is to say about a year (Note. Huber did not then know that worker bees never live as long as a year.—Translator.) covered the bottom-board; I feared that the healthfulness of their home be altered thereby. I did, in removing those corpses, what they would have done themselves in a different season when the cold weather could not have caused their chilling; but in order to prevent a danger, we reduced the entrance so as to keep out mice and other enemies which could injure them. But we took care to leave a free passage for outside air and its circulation in all parts of the hive by the aid of ventilating bees. Since then, I discovered the method which the bees use to keep in their home the purity of the air at the proper degree; my observations were confirmed by naturalists who wanted to see with their own eyes. I was especially charmed to see a young lady properly understand this maneuver of the bees, of which she did not suspect the existence nor the great utility. To become convinced of the absolute need of ventilation, we only need to close the bees up within their hives; asphyxy and death are the almost instantaneous effects of the interruption of the air circulation within the hives.

Second Inspection of the Hive

It was only in the beginning of January that we uncovered it to examine it and see whether the bees needed us.

This hive, stocked since two years, was, as I have said, filled with comb, honey and pollen; the combs suspended from the top, reached almost down to the stand which served as its floor and were separated from it only by a space of a few lines, at the time of our first visit.

This time, we found that the conditions of the hive were not the same, in some essential respects. The middle comb, which was sixteen or

eighteen inches high, had become loose from the ceiling and had slipped down apparently without touching the two parallel combs; it rested then on the bottom of the hive and could not go any further; it was even too far down to suit the workers. One of the rules which they follow in their architecture is to leave some space between the bottom of the combs and the floor of the hive; the space thus left being about equal to the passage needed for the body of the bee. We may be sure that, in doing this, they want a passage which permits them to pass and remove anything in their way.

It was upon this that they were working when we uncovered the hive. The wax which they were cutting with their mandibles and that we saw dropping in this spot left no doubt of this observation; there remained to determine the cause of the fall of this comb. We could not understand what had caused its breaking away from the top, when no jar had shaken it, to our knowledge; unless it was due to the softening of its upper fastenings, through the action of too hot sunshine to which they had been exposed at noon during our previous visit, and to the weight of the honey, which they could not support in this soft condition. This conjecture was confirmed in another occasion.

Third Observation

One would fear, as I did, that the fall of the comb would be the inevitable result of the manoeuvre which I have just described; by cutting it away from the hive base, the bees were removing its sole support. I was doubting their foresight, for the first time, but I was soon corrected in my error; a glance from Burnens upon this comb which had been detached taught us that its stability had been insured better than I had imagined and I admired the simplicity of the method which rendered such an accident impossible. If one remembers that the distance between the combs is only of 4 or 5 lines, one will not think it a very difficult work for the bees to do that which will unite them and prevent their separation.

The wax is the only substance at their command that they may use, but where will they find it, even if the cold did not prevent them from going out? The fields offering no crops in the winter, could they be induced, in extraordinary but foreseen cases, to take from their combs all the wax they might need? We had not divined it, but it was what we saw them do. A great number of bees, considerably scattered or grouped at different heights upon the fallen comb as well as opposite upon the two parallel ones, appeared to work in very distinct spots with a great deal of activity. The workers that were about this work kept it hidden from us entirely by the obstruction of their bodies; it was only when it was about finished that we saw: 1st, that braces, made of dark wax taken evidently from old combs, had been constructed in ogival shape and fastened on one side to the fallen comb and

on the other side to the parallel comb; 2nd, that these braces were heavier at the contact point with the combs than in their center; they looked in no way like cells; 3rd, that their shape was that of a clepsydra, of a salt cellar, or of such pillars as the wasps build to separate and support the nests of their young. At a short distance from the center of this same hive some other combs had been loosened from the ceiling, probably for the same reason.

In a cylindrical hive, one may see the edge of the combs just like the pages of a partly open book, by looking from the edge, the space between their edges cannot be observed. We therefore could not see whether the bees built braces between those spaces as they had done upon the edge that we had watched; this was in no way different from the accident mentioned and the way in which it was repaired. We understood that those simple and so wise dispositions were not intended to prevent only the fall of the combs in our domesticated colonies; they were applied on a large scale in all the hives that were exposed to the winds and to their more or less wild jolts.

Fourth Observation

As the least things in natural history may be of great consequence when one seeks to know the instinct and the habits of beings which are so remote from us, I desired to analyze better all that was presented in the previous observation. I therefore asked the person who had the care of this to give it increased attention; he did so conscientiously; his report, which I have here under my eyes, leaves nothing to be desired. The hive of which he took notice had, like the one just mentioned, its ceiling and all its sides glassed. Wooden triangles, mentioned formerly, had been glued at their extremities under the horizontal ceiling and had supplied the bees with all the supports which appeared necessary to their combs. One day, however, surprised by an examination from my young friend, I asked him whether anything extraordinary was happening. "Sure," said he, "your bees appear confused; they are covering the cells of the first row, those at the top of the combs; some of the workers are destroying those fundamental cells; the wax which they are cutting up is dropping on the lower combs, its fragments have no shape left in which we can recognize either rhombs, trapezes or hexagons." What had happened? Claude Lechex, this man, at present filling the place of Burnens, and whose varied talents are well known in Geneva, gave in this occasion a proof of his zeal and capacity. He noticed a slight bending in the triangles which sustained the combs, this inflection, almost imperceptible at the ends was more marked as they neared the center; the straight line which they formed at first had taken the shape of the outer side of an oval. This could be attributed only to the weight of the honey which had forced the triangle to part from the ceiling and to curve so as to alter, in an essential manner

the shape of the base cells. The behavior of the bees proves that this change had been perceived by them and it turned out, from the observation of Claude Lechex, that they had found instant need of repairing the disorder. They went to work, some to fill the space between the triangles and the glass, with propolis, others to rebuild the cells which they had torn down. When examined closely by a good observer, these cells appeared similar to those which had been the first outlines of fundamental cells.

If the works of bees are not proofs against accidents, one cannot see without admiration, I would even say without some gratitude, that bees have been taught to do, in every case, that which is best to remedy it.

When I mention the extreme pleasure which this unpublished observation has given me, is it necessary to give the reason of it? Without refusing to grant our bees a share of intelligence, how can we grant to them the foresight of precautions to take against casual dangers? That ideas so different, and yet the best possible under the circumstances should have come to them, at the same time, so that some of them would tear their work to pieces while others gave it more strength under a changed form! What better could we expect ourselves? Our attentions may be useful to them but are oftener noxious to them; thus far goes our interference. Should we credit this to chance? But chance is inconstant; it would not bring about the same thing twice in similar circumstances and we always see the bees follow the rules which have been prescribed to them.

All that we see done by the bees is the work of power and kindness. Let this thought always follow you among your hives and elsewhere and let it bring you back constantly to the Author of all things, the only being from whom we may expect true happiness.

(To be Continued).

QUALITY OF BASSWOOD HONEY

In the Questions and Answers Department of the Journal for February is a reply to a subscriber concerning basswood honey.

I am at a perfect loss to know why you and he have such adverse opinions of basswood honey, when such opinions are not shared generally.

This is a region where the main honey flow is from basswood, and with such propaganda as you and your subscriber are putting out in that article it is a little discouraging to be in a strictly basswood section. And on the other hand many, many references are made to basswood honey where it is regarded along with sweet clover, usually better than buckwheat, etc.

We have other minor honey flows here, cross vine perhaps coming second to basswood, with cow-itch and other sources making up a flora that gives a surplus every season. When we get pure basswood it is water-white and of good flavor and body,

everyone proclaiming it the best ever, and who are willing to pay a nice price for it. Is it possible that our southern basswood produces better nectar than its northern brother? I see it referred to up there as being amber colored. When we can get it anything like pure it is absolutely water-white, and so far I have got to see any honey that surpasses it in flavor or appearance in any way.

Geo. M. Jeffus.

Crockett, Texas.

(It is quite possible that basswood differs in flavor from one place to another. The honey to which I referred had been harvested at Lynnvill, Iowa, and was exclusively basswood. Our basswood honey has always been very light in color. We are glad that you come forward with a defense of basswood, for we want to give every side a fair deal.—Editor.)

NOTES FROM GERMAN BEE MAGAZINES

By Prof. Dr. H. v. Buttel-Reepen,
Oldenburg in Old.

Comb Foundation with Paper in the Midrib

Wiring the foundation sheets when fixed already in the frames is not very much liked in many parts of Germany, especially not in the heather districts, as heather honey is too sticky and cannot be removed from the combs by extracting. To prevent sagging of the sheets there has been made an invention by C. Burgdorff as reported in "Bienenwirtschaftliches Centralblatt." Burgdorff has enclosed a certain kind of strong but thin paper inside the midrib and as the editor says, the results are very satisfactory. I think the method of Dadant's Wired Foundation is still better, but now too expensive for Germany.

Tschersson

As Dr. Zaiss writes in the "Deutsche Illustrierte Bienenzeitung," the name of Dzierzon is pronounced "Tschersson," with the accent on the first syllable. Dzierzon has often said that he was a German and that his parents were Germans. In the house of his parents only German was spoken. Nowadays this famous beekeeper is sometimes claimed as Polish. He was born in Germany and lived in Germany all his life and has written only in German and exceedingly good German. The Polish pronunciation of his name is "Dscher-son" with a soft "s," but he himself never used this Polish sound.

Pure Mating

The island of Borkum, situated in the North Sea, has been chosen by Mr. Wilhelm in Olxheim, who is a breeder of a pure race with good qualities. There are no other bees on the island and the distance from the coast is sufficient to prevent other drones from disturbing the result. He there cultivates only selected queens and drones of the best colonies.

Stung by a Queen

It is a very rare event that the beekeeper is stung by a queen. The "Leipziger Bienenzeitung" reports of such a case and Lehzen, the former editor of the "Bienenwirtsch Centralblatt," told me some 20 years ago of a similar occurrence. He kept a queen in the closed hand and suddenly felt the stinging without having pressed the queen.

Honey Crop

The honey crop has been very bad over here during the last three years. The long winter of 1921-22 destroyed many colonies as honey and sugar were very scarce and many apiarists could not feed up sufficiently.

Queens are Best in the Second Year

Some renowned beemen, f. i. Harny (editor of "Praktischer Wegweiser für Bienenzüchter" and Luftenegger, author of an interesting booklet) pretend that queens have to be changed every year, as they only give the best results in the first year, that is the second year after birth. Dr. Brunnich, well known to the readers of the American Bee Journal, publishes a careful statement on the "Archiv für Bienenkunde," which shows that average queens are more prolific in the second year and the colonies with those queens give a better honey crop than stocks with queens 1 year old.

Dr. Brunnich has made heedful notes through more than 13 years and by a certain kind of calculation comes to the following result:

Queens 1 year old — 5.15 kg. (average of 111 colonies.)

Queens 2 years old — 8.6 kg. (average of 61 colonies.)

Queens 3 years old — 1.0 kg. (average 41 colonies.)

Queens 4 years old — 1.0 kg. (average 10 colonies.)

One kg. is 2.2 pounds.

— minus.

— plus.

During the two years Dr. Brunnich counted the number of eggs laid during one day (24 hours):

Year	Age of Queen	Max Num. Eggs p. day	Total Eggs.
1912	1	1150	123,400
1912	2	1250	132,000
1912	2	1900	175,000
1913	3	1000	92,700
1913	1	900	103,600
1913	1	1500	139,200

In spite of the quite different forage in the U. S. A., where the bee pasture is in many parts richer, the colonies larger and the egg-laying of the queen therefore more extensive, Doolittle and Dr. C. C. Miller thought it nevertheless best not to give a new queen every year, as they had the same opinion as Dr. Brunnich on account of long experience, i. e. they considered the queens on their height in the second year, and usually not in the first year.

German Methods of Beekeeping

are in some way adversative to those of the U. S. A. I am thinking especially of the manner to set up the hives in the apiary. In Germany the

usually double-walled hives are standing close together in a bee house, one tier above another, sometimes even three tiers above each other. But is it not nearly the same in America during winter time? Was it not P. H. Elwood who wintered 1,500 colonies in one cellar? How much time, labor and money were necessary to bring these colonies from the outapiaries; to this wintering place and back again? The German beekeeper leaves his colonies where they are, and they winter well. Reinarz, editor of the "Deutsche Biene," writes that a good bee house is the only right thing for German circumstances, and Dr. Zaiss and Luftenegger consider the American method, as far as it concerns the single standing of the hives in the open air, as "an erroneous way" for German beekeeping, whilst Dr. Armbruster is not of this opinion.

It is true that this question can only find a decision in a country where both methods are in use, but as custom becomes a second nature, the decision will always be a question of individuality. I myself have had hives in the open air as well as in a bee house, but I prefer by far the dry, shady and sheltered bee house.

To Prevent Robbery

A Swiss apiarist besmeared the entrance boards and the entrances of the hives with kerosene oil. The robber bees thought, as it is said in the "Schweiz Bienenzeitung," that each place smelling of kerosene oil would be a good place to get honey, and where did they gather?—round a barrel with kerosene oil in the midst of the village.

BALDENSPERGER LETTER

Friend Dadant:

By the time this reaches you, the new year will be several days old. As the Arab greeting goes: "Kul sane u inti salem." May you be safe every year, you and yours and your writers of the good things we read in the old reliable A. B. J.

Last year about this time, I was through the East, the fighting East, where the Greeks were sure to halve Asia. Now they are trying to fight it out. Always fighting. A year has passed and there is confusion worse confounded. Well, I saw the Orient, my Orient, where I was born and kept bees and was married. With delight I saw bees in the Lebanon, and when we reached Brumana—let me tell you that it was there that, forty years ago I met a "Bee," under those identical pines and courted her, and she became my companion for life. You can imagine how moved I was; so much so that an American lady who could talk only English and had joined me, asked me whether I did not feel well. I did not feel "on speaking terms" just then—Well, this is not bee talk. I am back again in France.

The Tarsonemus woodi was signaled at our very gates. We asked for help and the Minister of Agriculture sent an expert, to have a peep at it; Mr. Pontiers, of the Insectari-

um of Menton. As he was not an expert in bee diseases, he asked me to join him. We visited scores of apiaries in the Alpes Maritimes, Basses Alpes, Hautes Alpes, in search of the terrible mite. We picked up bees in every apiary but one, owned by an American, who refused to let us touch a single bee. *Politesse d'abord*; so we left the unhospitable apiary. But we found nothing. The apiary from which the mites were signaled by Abbe Ranguis in the Hautes Alpes, through l'Apiculteur, was in splendid shape; the owner had a dozen well-managed movable-frame hives, full of honey, the esparcette was in full bloom and those black bees were coming home so tinted with yellow pollen that they looked like hybrids. We picked up a few in front of every hive, but after examination Mr. Pontiers declared them entirely free of anything. The bees that fell before the hives were simply worn from old age.

The two brothers of this man, box-hive beekeepers, lost quite a number of bees through an unknown disease a year previous. We urged them to use movable frames, but their idea was that the old style hives are cheaper and that bee diseases may come anywhere. Well, that is true.

I had the good fortune to meet Dr. Morgenthaler, of Berne, at Marseille. I had a lengthy talk with him and he promised to send me some of his papers. I found them most interesting and most scientific. He told me that he had found cases of *Tarsonemus* in Switzerland. Well, until 1904, we knew nothing of *Isle of Wight* disease, but we had "*Mal de mai*," which Morgenthaler calls *Maikrankheit* and "*Mal d'automne*," or *Waldkrenkheit*. They resemble each other. I had never had any bee disease experience. A beekeeper told me, about 1890, that he had lost most of his bees by this unknown disease. The bees appeared swollen and dropped down before the alighting board. We had it for several years. About that time, *Gleanings* contained an article, May 1, 1894, page 349, by Rambler, speaking of bee paralysis, about Ontario, California, describing the loss of some 35 colonies in the apiary of a Mr. Nichols, of a disease entirely similar to our *Mal de Mai*; they said to have traced it to a queen received from A. I. Root in 1889, which was introduced into the apiary of Mr. Fatridge and spread the disease in San Bernardino County.

In the Fatridge apiary, the disease was worst after 1892; during that year the apiary of 60 colonies increased to 102 and yielded 9,000 pounds of honey. In 1893, the bees died off so rapidly that no honey was produced, and in 1894 there were about 20 hives with bees in them, "not enough to make 5 good colonies, and still dying." Was that *Tarsonemus* already? Unknown, of course, then! But it was entirely like our own troubles. Observations by Prieur, Devauchelle and others were guess work. But I am quite sure that we have in Europe nothing worse than the disease mentioned in your

America. I lost bees by this many times, especially about 1894. Well, time will tell.

P. H. Baldensperger.

Nice, France.

BREEDING A HARDIER RACE OF BEES

By John Protheroe

In discussing the question of winter packing do we not lose sight of one important point, the cultivation of a hardy strain of bees? Like other animals, they throw both hardy and tender stock. Without human care and protection the tender varieties would disappear, but when man steps in and coddles them, they survive. Surely the quality of being a good winterer and a rapid builder-up in early spring is worth cultivating. When all are, so to speak, wrapped up in absorbent cotton, how are you to weed out and select? Leave a yard of colonies of fairly equal strength and food reserve exposed to the same winter conditions; about Washington's birthday some will be surprisingly strong; others will have died down lamentably; some will have started breeding well; others will hang fire for a long time. Any Virginian beekeeper who takes careful notes through February and March will have been struck by these differences. Making all due allowance for the fact that colonies of apparently equal strength in October contain varying proportions of young bees and are therefore already of unequal spring strength, yet the performances of queens vary so much in this respect that it would be foolish to ignore it. Where bees are kept in cellars or in elaborate outer cases it is not possible to keep accurate statistics. For honey producers who purchase their queens this does not matter, but the man who raises his own queens should surely pay attention to the quality of hardiness. There are Alpine strains in Europe which have lived at an altitude of three to five thousand feet for a thousand years. These queens apparently go by the calendar and not by temperature and weather influences. For a thousand years the earliest layers have been in the best condition to collect stores for the following winter, and the colonies with the latest queens have invariably been eliminated. It may be argued that your best queen in midsummer is nearly always one that was among the best when you first opened up, but I should qualify this. There are queens which lay heavily too late in the season to be of any use; they are slow beginners. It is a geographical matter; these might be good in Quebec, but they are useless in Virginia. On the other hand, an early starter would be good everywhere.

To return to the packing question, if we want to get a yard that is going to be at top strength as early as possible in the year, then we must breed queens from mothers who show this quality in a marked degree. Of course, let us use all possible means

to sustain cluster heat, economic food, and encourage breeding, but I argue that to get the right queens you must raise them by selection from colonies subjected to a severe winter test. You must treat them like the Spartans did their children. They put them on the roof, exposed to the weather. Some fell off, others died of bronchitis, but the State held a world's record for hardiness. The Manchu can live almost naked and without fire in a climate like Canada. We do not aim at the Manchu because we consider him to be otherwise an unenlightened citizen; we even go so far as to exclude him and order a new furnace, but he is interesting as showing us what the human frame can stand and how much the human stock can vary. Bees are not mere standardized animals kept going by a given quantity of food transmuted into heat. You may adopt all possible mechanical means to supply and preserve this animal heat in a number of colonies and then find your results vary greatly. Let us grant that the honey producer can increase his carry-over of bees through the winter by elaborate packing; yet it must follow that the universal practice of packing would soften and level downwards all our strains of bees. It is wonderful what some bees will show without packing. If you can get five frames of brood in the middle of March in single-wall hives that have stood a temperature of 5 above zero, why pack? Why not try to level up to this standard?

Virginia.

STRAW HIVES

By Peter Schaffhauser.

You mention, on page 74, that you "sometimes wonder whether it would not pay us to build our hives with a thickness of straw on the outside, to protect them from the heat of the sun and from the cold of winter nights."

Permit me to say that I would rather have the straw on the inside. As you know, if you have a good comforter and a soft blanket under it you are warmer than by having the blanket on top of the comforter.

I have been planning on the same subject, but I never get to it, for it would require much larger hives, tops and bottoms and that means a pile of money for 496 hives and bodies.

Twenty years ago I made the hive walls out of solid straw; as in Europe there was plenty of it, but lumber was scarce and high. The bees wintered, summered and developed in them very well.

You asked if your readers know how to keep mice out of straw hives. Simply set the hives on a bench with legs set in from the outside and slanting backward. If the mice climb the legs they will be unable to reach the entrance. Under the bench legs must be a support strip to keep the bench from tipping over.

N. Carolina.

PEAKS AND VALLEYS OF MARKETING ORGANIZATIONS

By Samuel Hagerman

As many apiarists are working for an organization to aid in disposing of the honey crop, possibly a few words might be said now that will be of considerable value toward putting over an invincible organization later. Many things have been learned about organizing and many times as much will undoubtedly be learned as we continue to progress. If you, dear readers, really intend to organize, it will be best to prepare to swallow the bitter pills first, remembering this: an organization is no better than the characters of the members that compose it. Some organizations that have come within view of the writer, appeared more like a flighty, unwilling team of horses than anything else that one could imagine. Some of the members wished to do one thing, some another, and consequently they did not reach the beautiful goal visioned by them as their objective at their beginning. If an organization is to succeed, every member must take his share of the burden and climb steadily until the entire load has been carried up over the high, dizzy peak and down safely into the broad, beautiful valley of their visions. If your organization sets out to accomplish a definite purpose, do not falter until that purpose has been accomplished; meanwhile new worlds will have presented themselves for conquering—the cycle is never-ending—a continual fight will be in progress from the time of its inception onward as long as it exists.

We have in this state two organizations that have wonderfully aided the numerous members that market their products through them, or if the sales are made by members outside the co-operative warehouses, nevertheless the organization prices prevail. All pull together and stick together like so many flies on a sheet of sticky fly paper. Last fall the writer and his father drove over to the west side of the state to purchase some peaches. We found one farmer who was not a member of the "Co-ops," as they are called, who sold us all the peaches he had at 65 cents a bushel, but as he did not have enough to supply our wants we were obliged to search elsewhere. Most of the other farmers in the vicinity were members of the organization, and if you asked them the price of their product they would step to the telephone and call up the manager, asking the price he was receiving for peaches that day. Their price was one dollar per bushel, about one-third more than that of the farmer who was not a member. All the Co-ops had the same price and the thing I admired most was the fact that they all stayed for that price, or would not sell if you refused to pay it. This I would class as a real organization, as there was no chance for one member to put up a "holler" about another member underselling him. These fruit growers had confi-

dence in their manager and knew they would receive the price he stated, or possibly even more.

The Michigan Potato Growers' Association is another organization that has brought greater prosperity and better marketing methods to its numerous members. I might tell you much about their system of operation, but as we are interested in an organization to maintain a standard product and stabilize prices throughout the nation a somewhat different plan for sales and distribution would be necessary than that of the above mentioned associations. As honey is produced in every state in the Union, and Canada as well, the problem confronting the organizers would be many times that of an association where only a small group consisting of five or six counties, or possibly one-half of a state, would cover the extent of the territory of operation.

Last year some producers of a certain product met and organized to establish a uniform price and maintain a uniform product. It was agreed that this product should sell at a certain price. One-half of the members forgot their pledge before they reached their homes, judging from the different prices that this particular product sold for in their market. One of these fellows is an experienced beekeeper. This person sold his product for about one-half the price agreed on at the meeting. The other members had no redress. Here is a point I wish to emphasize: If a backslider is found in such an organization, a suitable group of by-laws should be formed to govern him, drop him from the organization and all of its benefits for a period of three or more years. This would probably cure him of this demeanor. The road to a successful honey marketing organization is not tarviacoated, broad and smooth, but is one containing many treacherous peaks that must be climbed or blown away with explosives before we reach the pleasant valley of our vision.

Michigan.

INTRODUCING QUEENS

By F. M. Baldwin

In the January number Mr. W. H. Lewis tells of introducing a queen late in the season by the honey method, and adds that the editor says he was lucky, as that method is not always a success. His reply is: "What method is always a success?" I want to endorse his question. There was a time when I thought that the honey route was infallible. To my sorrow I learned differently. A half dozen fine looking queens came from a friend in Virginia whose strain I was anxious to test out. The bees were cross and robbing a little. But I was so sure of the above method that I used it without much thought or care. Result was, the loss of all six. And I have never been able to get any of that strain since. No reply has come from letters and inquiries sent to my Virginia friend. I fear that something has gone wrong with him. At any rate, I have not

been able to test out what I thought was a very promising strain of gold-ens.

Dr. Miller was right. You can't tell what the pesky things are going to do. That adds to the interest and also to the labor. But we enjoy it, nevertheless.

The honey method is much better than the doctors will admit, and will work when other methods fail, frequently, but not always. Use plenty of honey, not just a smear on the queen. Make a mess that the bees will have to clean up as well as so immersing her that she can't run and show fear. The full sack of honey that they get when cleaning her off and setting the hive to rights makes them good natured, and that also helps the operation. Be careful not to start robbing by letting the honey run out of the front of the hive. See that it has a good bottom that will not leak, and tip the hive back. Just before dark is the best time for the job.

This method of introduction was under discussion at a state meeting in Georgia. Quite a number of those present, some of them old and experienced hands with bees, said they found the method very successful as well as satisfactory. Use a little judgment and it will work more often than many of the more popular ways.

Mr. Lewis further says that the surest of any yet given to the public. Perhaps. But it upsets the whole economy of the colony, making them all sick, and they are several days getting back to normal. It is too hard on the bees. Then it calls for an expert. And the word should be spelled with capitals, "EXPERT." In the hands of most of us it is only a dangerous experiment, with failure staring us in the face.

The objection is made to the honey method that it is hard on the queen. Granted. So is any method of introduction. Her majesty is taken from her home and so treated that egg-laying, which is her life, is stopped, and she is subjected to various discomforts, none of which add to her enjoyment. To be imprisoned in a small cage for hours and not allowed to lay when her instinct is strong to deposit a thousand or more each day is far from agreeable. Because the cage is the easiest way for us, we think little of how hard it is on her. Put yourself in her place and think it out from the standpoint of her instincts. Is not that method which restores her to her natural condition and lets her start egg-laying at the earliest possible moment the most desirable from her standpoint? I have known the queen to be traveling over the combs, as much at home as if she had always been in the hive, in an hour from the time she was poured over the top of the frames from a cup of honey.

That makes time for her and the beekeeper. It is at least five or ten hours quicker than the cage method, and normal conditions are restored several days sooner than when smoke is freely used.

Please remember that I am not claiming that this way is certain. My

point is that it is as sure as any method and gets the queen to laying quicker than any other way, unless it be by the push-in cage. There was a time when there was a strong claim that the push-in cage never failed to work. We don't hear much of it of late. Like all other infallible ways with bees, it broke down, I guess.

In the home yard where you have the honey-house in which to handle the queen without too much risk of her getting away, the method described by Mr. Lewis is worth trying. Don't be afraid of it. It does not call for an expert. It is nearly fool-proof.

Georgia.

FILLING PAILS—APIARY SHADE

By A. G. Kuersten.

Last fall Gleanings had an article about a special honey gate for filling containers with hot honey (Goose-neck, they termed it.) Of course I had to have one at once and had a machinist make one, and it's a dandy. I did not find it practical; first you have to lean over your work, and the hose would kink when I wanted to fill bottles nearer to the tank or one side, and so forth. I worked with it a few times until my back was nearly broken leaning over, then I put it in the attic to gather dust with the other relics.

Here is the way I do it now: I set my container (5-lb. and 10-lb. pails) under the honey gate on something that will just let it go under and hold a large table-spoon in such a way that the honey falls well back on the spoon, and the spoon held at about 45 degrees angle, with point down, touching the inside wall of the pail, just below the rim, and the honey running down the wall to the bottom. Hot honey run into a 5-lb. or 10-lb. pail or 2½-lb. can in this manner will not have even a bubble, and it is scarcely any slower than if you did not use a spoon. I have a 2½-lb. can sitting alongside to put the spoon in when not in use. Very simple.

The cartons the friction top pails come in, I save and use in the beeyard for shade in hot weather. I cut them down the four corners, making four pieces, one of them hung on the west side of a tall hive with the regular board shade on to hold it in place, makes a dandy shade, and they last 2 or 3 summers. One of the big sheets placed in front of a hive on the ground will keep the grass down all summer. Stick it under the front of the hive, with a rock on each of the front corners or the sun will warp it.

Iowa.

DOES BEEKEEPING PAY?

By A. L. Kleeber

Beekeeping and farming make the very best yoke fellows, and I find that they pull together in the most harmonious and helpful manner in plowing the long furrow for food, clothing, education, a few luxuries and a small bank account. First—They do not interfere with each other as so many things do when run in

connection with farming, but with bees and farming the manager can work with one and the other without neglecting either.

I have tried some of the other helpers, such as the threshing outfit, the huller and the corn shredding machine, and I find that these require the taking away from the farm and its work, the best hired men and the best work horses just at the time when the apples have to be picked, the potatoes dug and the corn harvested. But the bees and farming do not conflict like that.

In this clime we set them out of the cellar about April 10 upon that waste side hill where the orchard has been planted, and while Mr. Farmer is plowing, sowing and planting, they clean house, rear their brood, gather sweets from the early spring flowers and get ready for the rush season.

Then, about May 30, the crops are all planted and the grain sown, there comes a lull, a spell of patient waiting while the good Lord gets in His work with the sun and showers to make things grow and ripen, then the bees up in the orchard first require attention.

There are sections to fill, supers to put on the hives and empty hives to get ready for the new colonies. A great deal of this may be done in winter. Swarming time is a busy time, but by July 10th they are about through swarming and the farmer can turn his attention to haying and harvesting, while the bees require very little help until it is time to take off the honey crop in the fall, and again the last of November, when they have to be put into the cellar for the winter.

Thus the bees not only do not conflict with the farm work, but help to buy a muffler for the father, a rattle for the baby and the gasoline to run the Ford.

Professor Bailey, of Cornell College, says that "Bees are a much more important factor of pollination than the wind."

In a recent bulletin the Department of Agriculture says: "Plant mixed varieties of fruits, or at least avoid planting solid blocks, and be sure there are plenty of bees in the neighborhood to visit the blossoms."

As we can reap a much better crop of fruit where the bees spread the pollen for us, so there are more ways than one to get benefit from the bees where farming and beekeeping are in connection; for instance, we raise alsike clover, which produces fine honey for us as well as clover seed, and where the bees spread the pollen in the clover blossoms we get two or three times as much seed to the acre.

Connecticut.

WILL BEES STEAL EGGS?

By Geo. D. Larsen

I have read numerous articles relative to bees stealing eggs and have become very much interested in the subject because writers do not seem to agree as to whether the bees actually steal the eggs. Of course it is

a pretty hard matter to catch a bee taking an egg from another hive, so I suppose there will always be more or less doubt in the minds of beekeepers on this subject, but I will try to convince some of the doubters by relating a little incident which occurred in my yard during the past season.

During the summer I had a few colonies which had American foulbrood in a light form. In treating these colonies by the shaking method I came to the conclusion that it was not a good practice for me to follow, because I keep my hives in sets of two, and it seemed that after shaking a colony, which I generally do just before dusk, there would be many dead bees lying in front of the hive which was not affected, indicating that many of the bees from the diseased colony had tried to enter the healthy colony during treatment. There would, of course, be no way for me to tell whether any bees had succeeded in entering the normal colony or not, until the next cycle of brood began to develop, and I am glad to say that my fears were unfounded in each case.

In order to find a supposedly better method of treating American foulbrood, I searched my bee literature and finally came upon a plan which I decided to try, viz.: the bee-escape method.

I had one colony left which contained a few cells of American foulbrood, so I made a tin tube about an inch and a quarter in diameter, and about a foot long, and soldered a bee-escape over one end. The other end would fit into a hive entrance. Now, I went to the affected colony with a clean hive containing frames with full sheets of foundation and, after finding the old queen, and placing her in a cage, I removed the old colony from its stand and placed the clean hive, containing the caged queen, in its place. Then I took the bee-escape tube and inserted it in the entrance to the hive containing the affected colony, and carefully closed all other openings in this hive. The hive was now placed in such a position that the bee-escape extended out in front of the new hive so that the bees would leave from their old position and, therefore, return to the new hive containing their queen. The next morning I released the queen and it was surprising the number of bees the new hive contained. During the day the bees in the new hive increased until, toward evening, I was sure that most all the flying bees had joined the bees in the new hive. That night, after dark, I removed the affected colony, containing the hatching brood, to a new stand and in due time these bees raised a fine looking queen.

The day after the queen hatched I placed her in a cage and proceeded as above to treat this colony for American foulbrood. Everything went fine until the sixth day, when I noticed the virgin queen was missing. I examined the colony each day, but could find no queen.

Finally, on the 11th day, I noticed

an egg in a cell in the middle of a comb, in the center of the hive, and upon further examination I found another egg directly opposite the first egg. The bees proceeded to build queen cells about these two eggs and at the proper time one of these

queens hatched and tore down the other cell. There were no other eggs in the hive during this time.

This queen is now heading the colony in which she was hatched and I call her my stolen queen.
Omaha, Neb.

THE EDITOR'S ANSWERS

When stamp is enclosed, the editor will answer questions by mail. Since we have far more questions than we can print in the space available, several months sometimes elapse before answers appear.

HONEY FLOW—SMOKE—SUPERS

1. How do bees act when there is no honey flow? Mine seem to be busy gathering honey from early spring until fall.

2. How do you catch a swarm during a high wind when the bees are scattered and carried away?

3. While opening hives, can the bees be positively controlled with smoke? Mine do not seem to mind the smoke much, and perhaps I do not use enough.

4. Should I put on supers when first blossoms are in full?
NEW YORK.

Answers.—1. It is impossible to recognize, easily, when bees are harvesting honey, by just looking at them on the outside of the hive, if that is what you mean. An expert will notice that the bees are heavy and fall almost helpless at the entrance when they are heavily laden. The carrying of pollen is not a criterion. So the best way to know is to open the hive and see whether there is any fresh honey glistening in the cells. When no honey is being harvested, the bees are likely to try to rob, whenever a hive is left open long or when honey is exposed in the open air.

2. When a swarm is on the wing on a windy day, give them time to settle. They will either find a spot to settle or come back to the hive. It never pays to try to hurry them.

3. Bees may be positively controlled with smoke if you smoke lightly at the entrance of the hive first, before disturbing the hive. Then, as you open it, blow smoke discreetly

upon the bees as you uncover them. It is not necessary to cover them with a thick cloud of smoke, although this may be done to control a vicious colony. But one should repress the first indications of anger, by the use of smoke. Pure Italian bees require but little smoke when properly handled.

4. Put on supers when the lower part of the hive is pretty well filled. I judge that you do not inspect the inside of your hive much. Yet this is the only way to know their condition and their requirements. It is necessary to get a little practice, in order to succeed with bees, and there is no need of getting stung or of frightening them to excess if you use fair means.

Be sure and read some text-book for information as to the principles of the business. A magazine can only give you the current news and information. But the fundamentals should be learned from books.

POOR WINTERING

I have three hives of Italian bees that I packed the latter part of November, 1st by placing a super with burlap and fine hay on top of the hive, then drove barrel staves in the ground close together about 4 inches from hive, then packed dead grass and leaves in this space all around the hive. I made a tunnel with the entrance about 3 inches wide to pack front, with plenty of honey. I thought they would be all right, as the winter has been fine. When I looked them over yesterday I found most of them dead and in bad shape; the bottom of the hive was covered with dead bees and I had

to take them out, and there are hundreds of dead bees in the cells in the combs. Will the bees clean them out if there are enough left to pay to keep? What do you think is killing the bees? I believe it has been too warm for them; if not, is there anything I can do to save the rest. They have a yellow discharge that is quite noticeable.

IOWA.

Answer.—Your description would indicate that your bees have had unhealthy honey to winter upon, perhaps fruit juice or honeydew, for they do not show this diarrhea indication unless their food is unhealthy or unless they are confined too long in the cold. The winter has not been bad and your protecting of them should have brought them through nicely. Being too warm, as you say, would not injure them at all. They would eat but little and would keep in good shape. Perhaps you could help them by giving them sugar syrup, right over the cluster, made by mixing 2 pounds of sugar with a pound of water. If this may be done some warm day, in the evening, they might benefit from it.

Next season, if your bees should gather late stores that are not sealed over, better extract such stores, than let them use them. But these accidents are rare, and you may not have the same trouble again.

The bees usually clean out the dead ones from the cells, in the spring, if they recover from their wintering.

LAWFUL HIVE

I am only a boy who took a fancy to bees, and have six hives this winter. I wish to ask you for advice. Is there a law to prevent me from making my hives or keeping my bees in a box hive. The ones I have are in box hives.
PENNSYLVANIA.

Answer.—I believe they passed a law in Pennsylvania requiring that all bees be kept in movable-frame hives, so that they may be examined and treated in case they should suffer from foulbrood.

But, at any rate, you must transfer your bees from box hives to movable-frame hives, if you wish to succeed. The bees in box hives must rely on "luck" to succeed, while the bees in movable-frame hives may be cared for just as you care for your chickens or your live stock. They may be fed when they are short, brood may be given them to raise a queen when they are queenless and weak colonies may be helped from strong ones. None of that can be done with box hives.

You can make your movable-frame hives yourself, and about the only thing you would need would be a sample hive to pattern after. There is no law to compel you to make any particular pattern, but it is better to make a standard pattern than to make one of your own devising, because if you have a standard pattern you can sell bees more readily, when you have more than you care to keep.

INCREASE

In making increase, should the hive be placed near the old hive, or would it make any difference? And which is best, to leave the queen in the old hive, or put her in the new hive?
TEXAS.

Answer.—The brood will remain where it is put. The young bees that have never had a flight will remain with the queen, if they can. The old bees will come back to the old stand, but some of them may join the queen if they know where she is.

By this knowledge of facts, you should be guided as to where to place the hives, the brood, the queen. If you leave the queen on the old stand and take away the brood, you will have all the old bees with her. So this will make the brood hive rather destitute of bees. But if you move the old hive,

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JOHN M. DAVIS, Spring Hill, Tenn.

you will get all, or about all, the young bees in it. You must arrange to have some of the young bees with the queen, but you must have enough of them in the removed hive to take care of the brood. You must not give any combs to build to the queenless part, as they would build drone combs until they had a queen.

A good plan is to put the queen in the new hive, with one comb of brood and place the two hives side by side on the old stand, so that some of the old bees will go to each.

Another good plan, if you have two hives that you can divide, is to remove the brood without bees out of one and leave the queen on the old stand with the bees, then place the hive containing the brood on the stand of the second hive, removing the latter to a new place. You will thus make three colonies out of two and they will be all three very good.

There are dozens of ways of making divisions. The main thing is not to make any of them too weak and not give combs to build to queenless colonies.

DADANT HIVES

Can you tell me about how many beekeepers are using Modified Dadant hives? About how many hives are there in use? Would it be all right for comb honey here?

NEW YORK.

Answer.—We could not give you a satisfactory or correct reply by any means. There is no patent on the hive and there has

never been any. So we have no means of knowing how many are in use. It has been manufactured largely since our revision of Langstroth was first published, in 1889. The book was translated into French and had three editions; into Russian, with 5 editions; into Spanish with one edition. They are all exhausted and we are impatiently waiting for the fourth French edition, which the publisher was to deliver over a year ago, but which is not yet printed.

In this country it has been manufactured more largely since Mr. Pellett urged the use of it after giving it a trial.

For comb honey it is all right, provided you reduce the brood chamber of any hive which does not contain brood in every frame at the opening of the crop. Dr. Miller used a similar contracting method with his 8-frame hives which he doubled in the early spring and contracted again for the honey crop. The reason why this has to be done is that bees dislike to put honey into small sections as long as there is a possibility of filling the large frames. That is why the production of extracted honey is more profitable than that of comb honey.

REQUEENING—SPRAYING

1. I have some hybrid bees that I wish to requeen. Would it be advisable to requeen them before swarming time; and how long before?

2. Would you kindly advise me how to introduce the new queen?

3. What would be the best way to find and catch the old queen?

4. Can honeybees be killed by spraying fruit trees when they are in bloom?

MICHIGAN.

Answers.—1. If you buy your queens you will succeed best if you buy them early and requeen before swarming time. It will avoid the necessity of also Italianizing the swarms. If you rear your own queens it will hardly be possible to rear them before swarming time.

2. The method which has succeeded best with us is the introducing method recommended by nearly all the queen breeders. Put the new queen in an introducing cage and, after having removed the old queen, hang the queen cage in the middle of the brood chamber. Release her after two days by inserting a small piece of comb honey in place of the stopper of the cage. But there are dozens of other methods, all more or less successful.

3. We find an old queen by lifting the combs of her hive one after another. Two persons can do it better than one, for they can look on each side of the comb at the same time. But if you cannot find the queen in that way, remove the hive to another spot and put an empty box in its place. Then shake all the bees of the hive in front of this box on a white cloth. You can usually see the queen as she runs to cover. If you do not see her at the first shaking you may shake those bees over and

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over again on the cloth till the queen is found. Be sure and put the combs under cover while you hunt for the queen, so that robbers will not get into them. Put all back in place when the job is done.

4. Fruit trees should not be sprayed during bloom, but only before and after bloom. Both fruit growers and beekeepers agree to this. Of course there are people who think it is proper to spray trees during bloom; but then there are people who think the earth is flat. We are not publishing magazines for that kind, for they know all they need to know already.

Some such sprays, as lime-sulphur and the Bordeaux mixture, are repellant to bees, and if mixed with the other spray material will prevent them from sucking any of the poison.

Poisons may be used to spray that will kill the bees that work upon the blossoms.

CARNIOLAN BEES

As I have read quite a bit about the Carniolan queens and bee, I am asking you what you think of them.

1. Are they as good as Italians?
2. Would you advise me to try one, or would they mix with my Italians and in the course of a couple of years have nothing left?

3. I produce comb honey only and in your experience do they fill the sections to full capacity or not?

4. Is there more than one race of the Carniolan bee, or are there several different varieties? If so please tell me which one is the best.

ILLINOIS.

Answers.—1. The Carniolans are as good as the Italians, and very much like them in their habits, quiet on the combs, prolific, and some people hold them to be more hardy than the Italians. The drawback, in our opinion, is that there is so much resemblance between them and the common bee that a slight mixture would be hard to detect.

2. They would, of course, mix with your Italians if you kept them in the same apiary. In order to keep them pure, it would be necessary to keep them away from other races. With the Italians you can always tell when there is a mixture, by the appearance of the bees, but not so easily with the Carniolans.

3. As far as we know they will fill the sections as well as the other races do, in the same conditions.

4. We know of only one Carniolan race. Carniola is surrounded with snow-covered mountains, just as Italy is, and they preserve their purity.

SPRAYING

I would like to know what kind of spray to spray cherries with to keep them from being wormy, that will not injure bees; also when to use it.

ILLINOIS.

Answer.—Spray apple trees before and after bloom and spray cherries, plums, etc., after bloom, with the following mixture:

Lime-sulphur $1\frac{1}{4}$ gallon, and arsenate of lead powder $1\frac{1}{4}$ pounds, in 50 gallons of water. Less quantities in same proportion. Never spray during bloom. Spray about every ten days, two or three times. This is for the codling moth and other chewing insects. There is no danger to the bees when trees are not sprayed during bloom, and it never pays to spray during bloom for any purpose whatever. Mixtures may be bought from druggists or seedmen.

INCREASE

I lost some colonies by starvation in winter. Will it be all right to use these hives on top of colonies with good queens, just as soon as they need room, then divide them by removing the top hives during the crop and give each of them a queen?

Answer.—Yes, it will be all right to do as

you say. However, we would not advise using combs with drone cells. Better remove all the drone comb from these empty hives, as much as possible, and replace it with good foundation. Then, when you make the division, make sure that the greater part of the hatching brood and of the young bees are kept in the hive that is put on a new stand, because all the old bees in them will return to the old spot and there will be danger of your removed hives not having enough bees to take care of the young brood. By following these suggestions you may have swarms that will be just as good as the old colony and which may also yield honey if the crop lasts long enough.

SWARM CONTROL

I have Italian bees in 10-frame hives and produce comb honey. How would this work in the way of swarm control, as I do not wish any increase: permit the prime swarm to issue, hive same in a box for 24 hours until swarming fever is over, then hive same back in parent colony, minus the queen; seven days after swarm issued cut out all queen cells and either introduce old queen or a young laying queen?

I would like your opinion (1) as to probability of the colony swarming again, and (2) as to whether this method would result in less energetic work by the bees, swarming occurring with us during the white clover flow from which we get our surplus. When no increase is desired it has always seemed a waste of energy to have the prime swarm in a new hive and make them draw out and fill ten new combs, if there is a possible way to keep them at work in the parent hive. As to the honey flows here I will state that the brood-rearing supply usually comes from hard maples, tulip trees, and, a little later, fruit (apple) trees and locust; the flow from which we obtain a surplus coming largely from white clover and beginning about May 15, and in a month or six weeks this is usually gone and the bees hardly store enough to live on until the early fall asters come on from which they usually obtain their winter supply.

VIRGINIA.

ROOT "QUALITY" SECTIONS

WHY THEY ARE BEST. WE WANT YOU TO JUDGE
Send For Free Sample

THE A. I. ROOT CO.

West Side Station
MEDINA, OHIO

Answer.—The return of the second swarm to the colony, after keeping it two days, 48 hours, has been practiced for years in Europe, and is always successful. As to the return of the first swarm, it is not quite so positive, but we succeeded sometimes and heard of others succeeding also. However, we did not keep the queen out, but returned her with the swarm and, the swarming fever being over, she destroyed the queen cells. But it was necessary to give more room, more ventilation, more shade, etc.

Now, as to the method you propose to follow: (1) It is quite probable the colony would not swarm again if all the queen cells were removed and an increase of room, etc., supplied. However, there is nothing positive about it. The greater failure would be likely to follow if the queen is old, as preparations for superseding her would surely be followed by swarming fever again. But, at any rate, more than 24 hours should be allowed to pass before returning the swarm. (2) I do not believe there would be any decrease of energy, if the bees are induced to work by making conditions more comfortable, especially in ventilation and shade. The Demaree treatment might also help in this case, but it is not very practical in comb-honey production. The greatest objection to the method is the extra work which it entails.

LARGE HIVES—UNFILLED SECTIONS

1. From a swarm prevention standpoint how do you compare the Jumbo with the Modified Dadant hive?

2. I am producing comb honey and wish to use two hive bodies. Can you give a brief plan as to the management of them?

3. I have quite a lot of unfinished sections of comb honey from last year. I would like to feed this back. When is the proper time to start feeding to stimulate brood rearing? Main honey flow starts about June 1 to 15.

4. Would you fill supers with sections the same as for surplus storing and leave super on until the bees are ready for it?

5. In case the bees should not remove all of this last year's honey from the sections, will they store this year's crop on top of the old honey and will it do any harm if they do?

WISCONSIN.

Answers.—1. The only difference is one frame additional in the Modified Dadant hive and a greater bee space, one-eighth inch between all the combs, making 214 additional cubic inches of room for the bees to cluster. It is really a little less, because the bees build the upper part of the combs a little thicker, where they store the honey. But it probably gives at least 150 cubic inches more of clustering and ventilating room than in the Jumbo, and that

is a great point in the prevention of swarming.

2. Use the C. C. Miller plan, removing one of the two bodies, with the poorest combs of brood just at the opening of the crop, and replacing it with an equal amount of comb-honey supers.

3. Feeding back is good at any time when we want brood and the bees are not harvesting anything from the fields, especially if they are nearly short in the brood chamber. We need them to rear brood, or lay eggs, 35 days or more before the crop, because it takes approximately that long to rear field workers.

4. Use your judgment about that. If I were doing it, the quantity of honey in those sections would influence my action in the matter, also the strength of the colonies. Put more where more is needed and the colony strong.

5. If the bees do not consume all that last year's honey it will surely have a tendency to injure the quality of the lot unless the last year's honey is in extra fine shape.

Let me add, in connection with this, that I, at one time, fed back honey to the bees, in sections, in the same way. The crop began suddenly and rather unexpectedly, for they had been actually starving, and instead of taking honey out of those sections, the bees added more. But there is not much danger of their doing that in the circumstances that you mention.

ODDS AND ENDS

Western Colorado Honey Exchange

About forty beekeepers of the counties of Mesa, Garfield, Delta and Montrose, most of them extensive honey producers, met at Grand Junction, February 14 and 15.

The first day was devoted to the matter of co-operation and organization. It was decided to unite under the name of the Western Colorado Honey Exchange, though final union will be delayed until the fate of a bill now before the State Legislature relating to co-operative associations is settled.

On the second day there were addresses by Mr. Newton Boggs and E. W. Atkins, of Watertown, Wis.

Maple Sugar Crop to be Large

Early crop reports of the run of maple sugar syrup this spring would

indicate that the crop is to be considerably larger than last year. Our readers will recall that the spring was very unfavorable in 1922, whereas, so far, it has been exceedingly favorable to sap production.

Revised Edition of Productive Beekeeping

The third revised edition of "Productive Beekeeping," by Frank C. Pellett, has recently issued from the press of the J. B. Lippincott Co., of Philadelphia. There are several new illustrations in the latest edition which have not previously appeared, and some minor changes in the text. On the whole, the book is not substantially different from the editions which have appeared previously.

North Dakota Enacts Bee Disease Law

North Dakota, where beekeeping is a new enterprise, has enacted a law at the recent session of the Legislature providing for bee inspection and requiring that all bees and used equipment coming into the state shall bear a certificate from an authorized inspector to the effect that they are free from disease.

The law places the bee inspection work under direction of the commissioner of Apiculture and Labor. The present Commissioner, Hon. Joseph A. Kitchen, is himself a beekeeper, being probably the first man to keep bees in western North Dakota.

According to the Government crop reports, North Dakota has the largest per colony average of any state, being 157 pounds per hive for 1922.

Shipments by Water From Los Angeles

One of our correspondents in California sends us figures showing the shipments of honey from Los Angeles port during January, 1923. This shows the totals shipped were as follows: To London, 24,000 lbs., to Glasgow 62,200 lbs., to New York City, 46,250 lbs., to Manila 133,435 lbs., to Rotterdam 13,800 lbs. This would indicate that the Philippine Islands are using considerable American honey, unless it is shipped there for re-export.

Pound Packages Nuclei and Queens

Shipping begins March 15, and continues through the spring and summer. Capacity, 4,000 packages or nuclei. Safe delivery guaranteed within the United States and Canada. No disease. We breed from the best strains of three-band, leather colored and golden Italians that money can buy, and there is none better. Descriptive circular free. Ten per cent books order.

Two-pound package of Italian bees or two-frame nucleus, with young Italian queen, \$4.00 each; 10 or more \$3.75 each.

Three-pound package of Italian bees or three-frame nucleus, with young Italian queen, \$4.75 each; 10 or more, \$4.25 each.

Two-pound package of hybrid bees or two-frame nucleus, with young Italian queen, \$3.75 each; 10 or more, \$3.50 each.

Three-pound package of hybrid bees or three-frame nucleus, with young Italian queen, \$4.25 each; 10 or more, \$4.00 each.

One-frame nucleus, one pound extra Italian bees, with young Italian queen, \$3.50 each; 10 or more, \$3.25 each.

One-frame nucleus, one extra pound of hybrid bees, with young Italian queen, \$3.25 each; 10 or more, \$3.00 each.

A young untested Italian queen of the strain desired will be furnished free with any order listed above. The offer on hybrid bees is a material saving to the purchaser, as the queens are as purely mated Italian queens as can be had. I have only a limited amount of hybrids to offer.

BRAZOS VALLEY APIARIES, Gause, Texas

H. E. GRAHAM, Prop.,

Oats for Bees in Spring

An Illinois beekeeper, Mr. Jas. Harper, at Hersman, Ill., calls our attention to the rapidity with which bees take up pulverized oats. From his granary, where a stock of it was kept for feeding hogs, the bees worked readily on the pulverized oats early in March.

Honeydew Butter Scotch

A manufacturer of butter-scotch put up in packages and distributed regularly to the candy trade has a brand which he calls Honeydew Butter-scotch.

Evidently the manufacturer did not know that this is no recommendation of his butter-scotch.

Very probably, however, the public is as little informed as the manufacturer, so that no real harm is done.

Russell H. Kelty Chairman of Schedule Committee

Mr. Russell H. Kelty, Michigan College, East Lansing, Mich., has been appointed Chairman of the Schedule Committee of the American Honey Producers' League. This committee arranged a series of meetings in consecutive order last year and enabled many state associations to get speakers of national reputation that they could not have otherwise had. All state associations should now plan their summer meetings and write to Mr. Kelty in order to get in the schedule of the American Honey Producers' League.

MILLER MEMORIAL LIBRARY

We should be receiving more donations from our beekeepers in the way of books and journals. We would like to receive copies of the following bee journals, and if anyone knows where completed sets of these

can be secured, we shall be glad to buy them:

Southland Queen—Published in Texas about 1895-1904.

The Pacific States Bee Journal, Tulare, Calif., published about 1904.

The Beekeepers' Guide—Published by A. G. Hill, Kendallville, Ind., about 1875 or 1876 to 1890.

The Lone Star—Published by G. F. Davidson, Floresville, Texas, about 1902.

The Western Beekeeper—Published by Joseph Nysewander, Des Moines, Iowa, 1887-1893.

The Western Bee Journal—Published by P. F. Atelsbach, Hanford, Calif.

The Busy Bee—Published by E. T. Abbott, St. Joseph, Mo., 1890-1900.

Rocky Mountain Bee Journal—H. C. Morehouse, Boulder, Colo., 1903.

Canadian Bee Journal—Published by Hurley Printing Co., Brantford, Canada, 1888.

The American Apiculturist—Published by Henry Alley, Wenham, Mass., 1895.

We are greatly in need of the reports of the National Beekeepers' Association. I have no idea as to when these started or when they were discontinued. Separate numbers will be appreciated, and if a complete set is located, we would be willing to pay for them.

H. F. Wilson,
Madison, Wis.

He Likes the Caucasians

The February number of American Bee Journal has an article on the Grey Caucasian Mountain Bees. This article refers to a Mr. T. W. Klinger, who had some experience with these grey Caucasian bees coming from Sukum Province, and these bees are described as Abhasian. This is the strain that Prof. Frank Benton

secured for us while he was in the Caucasus, and they are the only bees we have obtained from that region which are to our liking. We should be very much pleased to get in touch with some reliable person that would enable us to secure bees from the same territory; provided arrangements could be made with the Secretary of Agriculture to import these bees into the United States.

Frank Rauchfuss,
Denver, Colo.

Carniolan and Caucasian Bees

I wish that space could be found to discuss the Caucasian and Carniolan and darker colored bees. I am lead to believe that many beekeepers are turning back to darker bees, and very many to the Caucasian and the Carniolan.

I intend trying these out on quite a large scale myself, as I have three yards and can easily keep them separate. I am convinced that the strain of bees I have been using travel only a short distance, as I have been testing them out by checking up the clover and buckwheat at certain distances from the apiary and find that I get no honey except from flowers that are within two miles. I believe these bees can be improved upon with respect to distance of travel.

Edwin V. Tilson,
Tillsonburg, Ont.

Production of Sweet Clover Seed in 1921

According to the crop and market report the sweet clover seed crop is estimated to be much smaller than that of last year because of a considerable reduction in acreage harvested for seed in North Dakota and Utah. In North Dakota, the leading state in the production of this seed, the reduction amounted to 50 per cent or more. Smaller decreases in acreage occurred in Kansas, Kentucky, Montana, Colorado and Wyoming.

The decrease in acreage was due primarily to low prices obtained for sweet clover seed last year. Many growers found it more profitable to plow under their crops than to harvest the seed. Prices offered to growers this year were approximately the same as those paid a year ago: \$4.00 to \$5.00 per 100 pounds was being offered for country run and \$5.00 to \$6.00 for re-cleaned seed.

Bee Causes Auto Wreck; Owner Pays \$3,500 Damages

Camden, N. J., May 26.—A bee buzzed into an auto-bus and cost the owner thereof \$3,500. A jury today fixed the amount. Edward Steward, the driver, became confused when the insect approached him, and the bus crashed into a telegraph pole. Nevin Husted, Jr., was severely hurt and the boy's father suffered minor injuries. The former got \$3,000 and the latter \$500.—New York Times.

Here Is Your Chance

From factory to you, our excellent made material at attractive prices. Send in a list of your needs of BEE SUPPLIES for the coming season and get quotations on it.

Langstroth portico 8 and 10-frame hives and supers, also 8-frame 4x5 comb-honey supers at cost prices, while they last.

CHARLES MONDENG

146 Newton Ave. N. and 159 Cedar Lake Road

MINNEAPOLIS, MINN.

APICULTURE SPECIALISTS

Ontario Agricultural College, Guelph

June, 1923, will see what is probably the largest class of students, specialists in apiculture, graduate from an Agricultural College, with the Bachelor's Degree.

These men have had at least one year with a successful commercial beekeeper, and for the past two years in college they have had special work in zoology, entomology and botany, besides the apicultural lectures and laboratory subjects. They have been trained so that they are in a position to enter either the commercial or scientific side of apiculture. A number of them have already made plans for entering commercial beekeeping this season.

The Ontario Agricultural College is in a good position to give the students a good training in apiculture. For two summers the men are under the direction of the Apiculture Department and must spend their summers in apiculture work. The apiculture option is so outlined that they receive good fundamental work in the biological subjects, besides covering the various phases of apiculture.

Names of the class are:

Back row—left to right: Elton J. Dyce, Roy G. Richmond, Harold B. Disbrowe.

Center row—left to right: Arthur N. Ure, Bernard A. Ward, Arnold A. Werner, F. Ross Armstrong, J. Ross Kirk.

Front row—left to right: Wm. C. Speers, F. Eric Millen (Professor), G. L. Jarvis (Demonstrator in Apiculture), Joseph Wilson.

Not in picture: Wm. A. Young.



The graduating class in beekeeping at the Ontario College of Agriculture with Prof. Millen.

Bees and the Radio

The program of the Washington State College Radio Station known as K F A E is announced in the different papers of the state.

Of interest to beekeepers it will be noticed that B. A. Slocum, of the College, is scheduled for talks on "Spring management of Bees," and other timely questions concerning beekeeping.

A Marketing Bulletin

"Sales Methods and Policies of a Growers' National Marketing Agency," is the subject of Bulletin No. 1109 of the United States Department of Agriculture. It has to deal principally with the success of the cranberry growers of the United States, who have carried on a national marketing campaign backed by practically all of the cranberry growers of this country.

The evident success of this organization is shown by the continued rise in price of cranberries as compared with other food products which have not been handled through a national marketing agency.

The bulletin should be of interest to every beekeeper interested in the possibilities of national marketing agency for honey.

Foulbrood in Switzerland

The report of the Swiss Association covering foulbrood and its extermination in Switzerland during 1922 is out. The situation is encouraging.

Out of a total of 173,158 colonies the total number infected was only 73, or about 4,000 of 1 per cent.

The report, which covers 8 pages and was written by Mr. Leuenberger, gives a map of the region covered, together with the areas of infection.

Pamphlet by Dr. Enoch Zander

Leitsake einer Zeitgemassen Bienenzucht (Leading Principles of Harmonious Beekeeping) is the subject of a 48-page booklet by Dr. Enoch Zander. The booklet aims to give the principles governing the different activities in beekeeping from foulbrood to honey production. Each principle is in the nature of a condensed sentence.

Correspondence

Dear Mr. Dadant: I am sending you, for your perusal, a "Memoire of Apiculture" published in France in 1861, and written by Prosper Grandgeorge. It appears to me to contain many absurdities, but I understand you like to read old bee books.

Can you tell me whether Pellett's "Practical Queen Rearing" is to be published in the French language? I have heard that you translated it.

I have used 5 Dadant hives, last year, with bees of the Carniolan race, and I am sorry to see that this hive is not more fully used in Canada. During the months of July and August, the 11 combs of those hives were continuously full of brood, and they yielded 1,600 pounds of honey. I believe that the Carniolan bee is the most prolific, even more so than the Italian, and that it is the bee for large hives. Only one of these hives swarmed, and that was on August 30, when I thought swarming was entirely over.

Aime Lafreniere,

Ile Perrot, Quebec.

Answer.—I translated Pellett's "Queen Rearing" into the French language some two years ago, but afterwards heard that a similar treatise, much more extensive, was to be published by Mr. Perret-Maisonnette, of near Paris. This, I understand is to be out soon. We will want to see it before we go any farther with the translation. Book publishing is exceedingly expensive in France at present, and that is why our "Honeybee" is still in the publishers' hands, though very much enquired for among beekeepers.—Editor.

Arizona Inspector

From the Arizona Republican we learn that Peter H. Benson, of Palo Alto, has recently been appointed Bee Inspector for Arizona. Mr. Benson is a large honey producer and President of the Arizona Honey Exchange. For the past two years the inspection has been done by assistants in the office of the State Entomologist.

Early Queen

A note from M. S. Nordan, queen breeder of Alabama, states that he grafted his first cells on March 10 this year and they were placed in the nucleus boxes on March 20. This first queen emerged on March 23 and was laying by April 2.

Mr. Nordan thinks this is a pretty early date for queens to be reared and shipped. Certainly it is early for the backward season we have had this year.



Pure stock and satisfaction guaranteed. Prices, Carniolans and Caucasians, untested, \$1.25; tested, \$2. Italians and Goldens, untested, \$1, tested \$1.50. Circular free.

GRANT ANDERSON,
Waco, Texas, Route No. 2.

Bees and Queens

Your satisfaction guaranteed. Send us your order.

Queens, untested, \$1.25 each, \$12 per dozen.

Bees, 1 lb. with untested queen, \$3
2 lbs. with untested queen, \$5.

All mail charges paid.

E. A. SIMMONS,
Greenville, Ala.

PURE CARNIOLANS

Are very gentle, hardy, and as honey gatherers are unexcelled; extremely prolific, admirable winterers, highly disease-resistant; in short, they are Superior.

Carniolan breeding mothers imported in 1922 insure purity, vigor and breeding. Consider this in buying.

Write for our Circular, which gives you more fully the history, merits, prices of queens, etc., of this hardy gray race. It also gives you some accurate information on the other different races of bees. It's free for the asking.

Investigate, get the facts. CARNIOLANS merit your consideration over others. A trial will convince you.

W. A. HOLMBERG
DENAIR, CALIFORNIA.

BEAR'S MOUNTAIN BRED ITALIAN HONEY BEES

Will be ready for May shipment if you place your order now; Goldens, three-bands, leather colored.

Which Kind do you Prefer?

They are reared high up in the Allegheny Mountains and have a wild forest range at a high altitude.

I send you just good, healthy, hardy, pure stock, the kind of bees that produce results. One Hoffman frame filled with honey and brood. One pound of bees and one good laying queen, mated and laying enroute to you for \$5 for each nuclei. Two frame nuclei, \$6 each. Send the order before I have sold out all that I have to sell this year. **Do it now! TODAY!**

**Health Certificate, Safe Delivery
Guaranteed.**

20% books your order for May delivery. Address

HIRAM H. BEAR
HINTON, WEST VIRGINIA



Mr. Barthelmy, of Marseilles.

Marius Barthelemy

Whose photo is here shown, is manager of the Experimental Apiary of the Societe des Bouches-Du-Rhone, at Marseille and was one of the active workers for the success of the International meeting last fall. He gives lectures on bees and beekeeping four times a month. He has made a number of interesting experiments, some of which have been mentioned in the American Bee Journal; the last one on page 156, 1919, in which a refrigerated queen was found to return to her prolificness after laying drone eggs for a few weeks.

LETTER FROM THE CAUCASUS

Tiflis, December, 4, 1922.

Dear Mr. Dadant:

Your letter came during my absence. I have just returned from the Armenian meeting of beekeepers. Two letters came, one from America, the other from England, owing to your insertion of my previous letter in the October number of the American Bee Journal. Both ask questions concerning the peculiarities of the Caucasian bees and express the desire of securing queens of the best race. I believe the new arrangements made by our Government may give satisfaction to these demands, but the sending of queens will be unsafe as long as the transportation of mails is not regular. Let us hope that, within another season everything may be properly arranged.

It is with great pleasure that I learn of the organizing of the C. C. Miller library. His name is very popular among Russian beekeepers and all his books were translated into Russian. It would be nice to have those books for the library, but in the

five past years books have entirely disappeared from the market. After having starved for bread, we now starve for books. Your "Hive and Honey Bee" (l'Abeille & la Ruche) is now a rarity. A fifth edition of it in the Russian language was published in 1913, under the management of Mr. A. Dernoff. The demand for it is great now, but it is out of the question to publish it under present conditions.

I will certainly send to Prof. Wilson the whole of my modest publications and I will also try to secure for the library a copy of the phototypic album of Caucasian apiaries published by our Association, of which you have given us such flattering praise.

Let me say a few words concerning the Beekeepers' Association of Armenia. This was their first meeting since the revolution; it took place in one of the best Transcaucasian regions, in the little city of Djalahl Ogli, in the district of Bortchaline. This region of "greatly-suffering Armenia" has withstood more mishaps and damage than any other part. During the war it was invaded by the Turks and the horrors of carnage; during the revolution it passed from one nation to the other. It now does a persistent and renovating work. The American Relief Committee works there, also, with admirable energy and has covered the entire region with a network of relief establishments. This committee feeds, raises and sustains thousands of Armenian orphans and fugitives; it organizes vegetable gardens, farms and even apiaries; it supplies the population with agricultural implements; it establishes electric stations, etc. This committee has taken over from the Government 35,000 acres for cultivation.

At the exhibition which was held during the meeting, I admired the beautiful exhibits of products from the American seeds. We saw cauliflowers, and cabbages of large size; potatoes, beets and beans of a sort unknown to us. Right there, near the exhibition building, they made a demonstration of the American field implements. Representatives of the Republic were present at this demonstration and orders were at once given for Armenia.

Our meeting was quite enthusiastic and several resolutions were passed, especially to enact laws defending brood; organizing an apiary bureau at the Ministry of Agriculture; establishing model apiaries for experiment and importing necessary implements.

Representatives of the Government also attended the meeting and promised to do all they could for the requirements of beekeeping.

The week which I spent among the native beekeepers, everything that I saw or heard, gives me the impression that this ruined locality will soon become one of the most flourishing of the Transcaucasus.

C. A. Gorbacheff.

Translated by C. P. Dadant.

THE CONDITION OF APICULTURE IN ITALY

(From American Consulate, Genoa,
Italy, May 31, 1923).

There is a great contrast between the condition of and interest taken in Italian apiculture before and since the war. Before the war little interest was taken by farmers or others except a few students.

What brought it into prominence was the great shortage of sugar soon after the declaration of war, followed by the law forbidding the use of sugar in pastries and sweets. The demand for honey then increased a hundred fold. Adequate importation of honey not being possible, owing to shipping and other difficulties, and to the fact that the countries where the honey originated had become enemies, it was found necessary to develop the home industry. Italy possesses a very rich melliferous flora and a splendid type of bee, i. e., the *Apis ligustoca*, with golden-yellow rings.

Honey was imported in large quantities from Algiers, Tunis, Spain and Central America, but it was of a very inferior kind and cannot compare favorably with that now produced in Italy. In a very few years' time Italy will be in a position not only to supply its own demands but to export in large quantities to other countries whose local production is small or insignificant, especially to Northern Europe. The excellent

quality of the honey is sure to acquire for Italy a first place in the honey exporting countries of the world, and being so near to England, Denmark and Scandinavia it will there easily compete with other exporting countries. There is no place in Italy which is absolutely useless to the bee. There are a few poor zones, but the large majority have highly melliferous flora, and the largest amount of honey is collected from what are termed "common meadows."

The price of honey has been reduced about 30 per cent since the end of hostilities and it is expected to be reduced still further, but even if the price of honey were the same as that of sugar, the apiculturists will still be in a position to make a good steady profit out of the business. Before the war honey was restricted to industrial confectionery and pharmaceutical uses. Private use was very limited, in fact only foreigners and those who had acquired foreign customs made any use of it.

During the war many had to use honey to replace the sugar in cakes, pastries, etc., and the result was so pleasing that honey was very much in demand by even those of modest means, so that whereas the industrial demand is about the same as before the war, the domestic demand has increased beyond all expectations now that honey has become so popular and appreciated as a healthy, exquisite, wholesome and nourishing food. The increased demand keeps the price up, and with the present abundance of su-

gar there is no fear that there will be an immediate fall in price, and those who have lately been materially interested in apiculture need have no qualms for any loss.

Apiculture in Italy could and should be made a very successful industry by the use of modern equipment. It is necessary, however, that the apiculturists improve and continue to improve upon the quality of honey now current, and to place it upon the market free from any heterogeneous substances and impurities, which would damage the export trade and place the product on a much lower level than it deserves in comparison with that of other countries.

(To be continued).

Brookside Apiaries

If it's more than ordinary queens you want, write us about our new Italian-Carniolan 1st cross strain. We will have full colonies at \$10. Write for particulars.

O. E. TIMM, Prop.
Bennington, Nebraska.

MONEY AND SATISFACTION FOR YOU

Save one profit by buying direct from factory. Standard, Jumbo and Modified Dadant Hives; cedar or pine. Write for catalog.

A. E. BURDICK, CO.
Sunnyside, Wash.

THREE FRAME NUCLEI COMBLESS PACKAGES AND PURE ITALIAN QUEENS

My aim is Quality, Quantity, Quick Service. See what some of my customers say, and be convinced that I am sending out the very best stock that money can buy.

Having had 27 years' experience as a large honey producer, as well as queen rearing and the package trade, places me in a position to know the beekeepers' needs to gather a good honey crop.

I am located in the best section in the South. We have thirty trains every day carrying express and mail, which enables me to get all shipments off with dispatch.

I guarantee every shipment as represented, and when they arrive in bad condition, have your agent note same, send me your claim and I will settle same at once and save you the trouble of trying to collect from the express company. This alone is an item worth considering.

My nuclei have enough bees to cover all three frames, therefore there is no need of an extra pound of bees, as they would do more harm than good, as bees must have plenty of ventilation while in transit.

A. B. Marchant, Jesup, Ga.

Dear Sir: In regard to the 50 nuclei I purchased from you last spring, they are world beaters; some of them made me over 200 pounds of comb honey. Would like to have 1,000 more.

Frank Snyder, Anamosa, Iowa.

Dear Sir: Bees arrived in A No. 1 condition and I write to thank you. They are a nice lot.

C. S. Pickford, Halifax, N. S. Canada.

Dear Sir: The 20 three-frame nuclei you sent me averaged 150 pounds of comb honey, with 30 per cent increase. Slogan ought to be "Use more of Marchant's bees and harvest bigger crops."

Merritt Oplinger, Walkerton, Ind.

Dear Sir: The nuclei arrived in almost perfect condition.—W. J. Abernathy, Beeton, Ont., Canada.

Dear Sir: Received last shipment today; arrived in good condition; the other shipment in fine shape; am well pleased with them.

C. E. Jacox, Lander, Wyo.

Dear Sir: Received the 12 crates of bees with hardly a handful of dead ones in the lot. They are certainly a fine, fine lot. I will place my orders with you next year.

Wilbur Swayze, Dunville, Ont., Canada.

Dear Sir: Received the bees April 22nd, in fine condition. They are certainly a fine lot of bees and the queens are dandy. You will receive the next of my orders.

Roy H. Stitt, Illion, N. Y.

1923 prices of 3-frame nuclei with a select untested queen: 1 to 5, \$5 each; 6 to 12, \$4.90 each. Two-pound packages with queen: 1 to 5, \$4.50 each; 6 to 12, \$4.25 each. Write for prices on larger lots, also on 5-pound packages.

Prices of queens after May 15, single, \$1.25, 6 for \$5.50 12 for \$10; 50 at 70c each; 100 at 60c each.

A. B. MARCHANT, JESUP, GEORGIA

REFERENCE: Brunswick Bank & Trust Co., Jesup, Ga.

CAN SWARMS BE COMPELLED TO SETTLE BY NOISE?

By Major Shallard.

All the text books say they cannot, but my experience tends to show that these books are all wrong.

I have induced swarms to settle so often by beating a kerosene tin that the printed denial of its efficacy has no weight with me. I wish to make it sufficiently plain that I do not pretend to be able to influence a swarm to which the scouts have returned, and who are making their second flight for their new home. I recognize that nothing short of catching these in a bag would have any effect upon bees in their frame of mind.

What I am referring to is the swarm which, upon its first emerging, fails to come to any immediate decision as to where it will settle. In some cases these drift away further and further, until they are in danger of getting beyond control; and it is in this stage that beating a tin, or doing anything else that will upset their normality, is effective. I was approaching an outapiary one day, on foot, and luckily had a kerosene tin in my hand. Some quarter mile from the apiary, I met one of my swarms just loafing along. Studying each tree and bush as it came to it, but not settling. They flew all around me (as is usual in such cases); they were spread over a fairly wide area. I

sent my helper to the apiary for an empty hive and combs, and by the time he returned I had the swarm nicely settled on a bush simply by beating the tin with a stick.

Now, it is obviously no use telling a person a thing cannot be done when he has done it, not once, but frequently, over a lifetime spent in bee-keeping.

My theory is that the queen, for some reason, does not care to settle. Of course, some will say the queen does not settle first; but will not the bees which are flying thickly around the queen settle on a place if the queen hovers near it? I think so. When the swarm does not appear to know its own mind, the bees will settle on various places and after a small clump has scattered they will break up and follow the queen again. In some instances the swarm is moving off before these clumps break up. They probably follow the queen by sound. If noise is made they lose this guidance by sound, and become demoralized. Another factor, and I think a big one, is the sound waves. The flying men tell us there are air waves and air pockets, and it appears to me that the sound waves produce air pockets and the bees find it difficult to fly under these conditions.

If any readers have a large Chinese dinner gong (a big thing about 18 inches in diameter and beaten by a drumstick) let them get among a loosely-flying swarm and beat it and then watch results. I venture to predict that they will find the bees begin to flutter and gradually fall to the ground, settling on anything handy.

I have compelled a swarm to settle in this way on many occasions, not with a gong, because I had none; but with an empty kerosene tin.

I have also compelled a swarm to return to a hive after it had settled in a tree a hundred feet from the ground, by firing a charge of shot through it. Whether I killed the queen or not, I do not know, or do not remember (it was many years ago), but I saved the swarm, which broke up and returned to the hive it issued from. Another way I got a swarm down was by prayer. Evolutionists would call it coincidence. I do not.

(I, too, used to believe that noise compelled bees to settle, though my father was skeptical. Then we read in Langstroth's work: "The ringing of bells and beating of kettles and frying pans is one of the good old ways more honored by the breach than the observance. It may answer a very good purpose in amusing the children, but I believe that, so far as the bees are concerned, it is all time thrown away."

So we quit beating tin pans and the bees settled just the same. But they got away just the same, as with Mr. Shallard, when they started on their second flight, or when it was a secondary swarm, going with a virgin on her wedding flight. As to prayer, why not try it on one of those runaway swarms?—Editor.)

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BEE SUPPLIES THAT ARE MADE TO SATISFY

Let us quote you prices before you place your order, and we will save you money.

Write for our special prices on honey containers. We have a complete stock of glass and tin containers at prices that are right. Orders shipped the same day they are received.

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Write for our new 1923 catalog showing full line of bee supplies.

A. H. Rusch & Son Co., Reedsville, Wis.

We Manufacture Foundation

and make a specialty of working your beeswax into foundation for cash or wax in payment.

Ship your wax now for 1923 season. We furnish a full line of Supplies, Beehives, Sections, Frames, etc. The best made in Wisconsin. Write us for prices.

GUS DITTMER CO., Augusta, Wis.

3 BANDED

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GOLDENS

You may be, if yours is one of the 15th orders we receive, for to every 15th order we have a pleasant "SURPRISE." Will you be pleased? We think so, both with our queens and your lucky "SURPRISE." Now ready to ship. Safe arrival and satisfaction guaranteed in United States and Canada. Wings clipped free on request. Prices, queens, untested, \$1 each; sel. untested, \$1.25 each; sel. tested, \$2 each; virgins, 50c each. Special package bees shipped from Louisiana. Two-pound package with queen and frame hatching brood, \$5; 3-lb. package, \$5.75. Nuclei, write for prices.

Ohio Valley Bee Co., Catlettsburg, Ky.

Southern Yard Nuclei Sold Out

We can make no more nuclei shipments this spring from our Southern yard. Thank you, beekeepers, for your faith and patronage. We are now devoting our efforts to our Northern yards and offer the following:

After June 1st:

Certified Honey Girl queens in mailing cages, each \$2.00
Certified tested daughters of Saint Romain's Honey Girl—

Certified tested daughters of Cutts Hamilton Queen, each ----- \$8.00
(Includes 2-frame nuclei).

After August 1st:

Certified tested daughters of Chaffee's Honey Girl CCB61
Certified tested daughters of Achievement Honey Girl CCB301,

Certified tested daughters of Prairie Queen CCB275, each ----- \$8.00
(Includes 2-frame nuclei).

We will have a few pedigreed, certified, tested queens to offer this summer, with 2-fr. nuclei, each --- \$10.00

These queens, from ancestors with high production records, mean an increased production in your apiary. Write us at once concerning them.

CHAFFEE-CRITES BEE FARMS
AMENIA, NORTH DAKOTA

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The Very Best Quality.

Prompt Service

Order now and make sure of having your supplies ready on time. If you are looking for Quality and Service, try us. Send your orders, large or small. Prompt shipments by mail, express or freight. We manufacture and carry in stock a complete line of supplies for the beekeeper.

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AUGUST LOTZ COMPANY, Boyd, Wisconsin

BEES Bred for Honey QUEENS

My bees are **Moore-Howe** strain, bred from select mothers chosen from my 1,000 colonies with special reference to honey-gathering, white capping, uniformity of color and gentleness.

First premiums for the last five years at fairs in my section on queens and nuclei.

Prices for April and May:

3-frame nucleus with untested Italian queen ----- \$5.00

1 untested queen, \$1, 25 or more, 90c each.

Tested queens, \$1.50 each; 25 or more, \$1.40 each.

I guarantee a square deal.

JOHN W. CASH, Bogart, Ga.

COST OF SWARMS

By Claron D. Barber.

Although beekeepers generally realize that natural swarming and a full honey crop do not go together, I doubt whether most of us are aware just how unprofitable uncontrolled swarming really is. This year as an experiment and to try out natural increase, I selected two quadruple sets of colonies of the same average strength and, giving both sets abundant ventilation and surplus room, allowed the first to swarm naturally, preventing swarming in the second by cutting out all queen cells every ten days. The two sets started on an even footing; if anything the swarmers had a slight advantage, as they started storing and also swarming preparations before non-swarmers. They finished on anything but an equal footing in the total surplus given by each group. Although a June drought and a cold, wet July cut down the nectar supply and were somewhat conducive to swarming, I believe that the results are representative. To say the least, I found swarming unprofitable. The following tabulation speaks for itself:

Group 1 (Swarmers)

Col. No.	Swarms.	Surplus Sections.
1	3	0
	1a (1st)	48
	1b (2nd)	0
	1c (3rd)	0
2	3	0
	2a	24
	2b	0
	2c	0
3	2	0
	3a	27
	3b	0
4	3	0
	4a	16
	4b	0
	4c	0
Total		115
Average, 28%.		
Increase, 266 per cent.		

Group 2 (Non-swarmers)

Col. No.	Surplus Sections
1	128
2	80
3	65
4	49
Total	322

Average 80 1/2.

Swarms 1b and 1c, 3b and 3c, 4b and 4c, were united, because of weakness, to form three colonies of medium strength, reducing the increase from group 1 to 200 per cent. Swarm 1a, the swarm with best record, was the first to emerge and was hived on empty combs. The other swarms were hived on full sheets of foundation. Colony 4, the poorest hive of the non-swarmers, was handicapped by having a queen fail in the early days of the honey flow. To sum it all up, eight colonies of increase cost me 207 sections of honey besides the equipment, labor, etc., that went into them. As I was selling my honey

from the roadside at 30 cents a section that honey was worth \$62. The only extra expense of the non-swarmers was for the section, foundation, and labor of scraping, etc., which amounted to not more than 4 cents a section, or a total of \$8.28. The rest of the expenses were the same for all the colonies, while the labor of hiving and manipulating eleven extra swarms certainly balances the work of queen cell cutting, putting on and taking off supers, and similar manipulations above those required by the swarming group, that the non-swarmers necessitated. The eight colonies thus cost at least \$54 in loss of honey crop. The eight hives painted, put up with full sheets of foundation, were worth \$48, bringing the total up to \$102. The eight colonies at best could be valued at \$80 that late in the season, and \$64 would be nearer their actual worth.

At best, then, those eight colonies cost me from \$28 to \$38, or those four swarming colonies lost me at least \$20, probably \$38, and possibly more, for I am rather sure I could increase artificially for less than \$8 per colony, hive included. Figure up for yourself what the loss would be on a large yard.

Illinois.

Experiments on Plum Pollination

Bulletin No. 253, written by A. H. Hendrickson, of the College of Agriculture, Agricultural Experiment Station, Berkeley, Calif., has for its subject, "Further Experiments in Plum Pollination."

The experiments were conducted to determine the value of mixed planting of plum trees to bring about best fertilization.

Incidentally, bees were tested out as pollinators, corroborating the data previously gathered in similar experiments in 1920.

Bees were not universally determined as being the prime factor in pollination, especially where trees were self sterile.

However, where bees were placed in an enclosure with two different varieties of plum trees, one of which was self sterile and the other fertile, the results were excellent. For instance, the percentage of matured plums of the Formosa variety in average set in open orchard was eight-tenths of one per cent.

Where a Formosa and a Wicksou tree were enclosed with bees the percentage matured was seven and three-tenths per cent.

The report covers 24 pages and may be had by applying to the University of California Press, Berkeley, Calif.

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Easy to raise. Larger profits than any other live stock raising. Stands strictest investigation. Recommended by Government. 4 different plans. One will suit you. Complete description free. Send today.



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"Beeware" and Dadant's wired foundation plus Protheroe's SERVICE will give you the greatest value for your money. Be forearmed and order your supplies today

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I am putting my name and address in this space to tell you that I am making cypress beehives and cypress supplies such as hive-bodies, covers, bottom-boards, and other items for the beekeeper. I want an opportunity to figure with you on your wants. Prices and goods right. Ask for my prices.

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BEEKEEPERS WE MANUFACTURE DOVETAILED HIVES, HOFFMAN FRAMES, SECTIONS AND SHIPPING CASES

Our hives are made of best grade White Pine, cut accurate and smooth to standard measure. Sections are made of Basswood polished on both sides. There are no better made.

We carry a complete line of everything used in the apiary. Our shipping facilities are as good as can be found anywhere. We want your business. We guarantee prompt and satisfactory service. Price list free.

MARSHFIELD MANUFACTURING COMPANY, Marshfield, Wis.

ITALIAN QUEENS—Three Banded and Goldens

After rearing queens in a commercial way for 12 years, and on a large scale, we believe we can offer as good queens as can be had. Our breeder has reared over 110,000 queens, and beekeepers who wanted good stock have bought them and got good results from them.

We use only the best breeding stock, and use only the best methods in rearing our queens. Send us your order and get good value for your money. Everything we sell must please or we refund your money.

PRICES OF QUEENS:

Untested Queens:		Tested Queens:	
1 Queen	\$ 1.00	1 Queen	\$ 1.50
12 Queens	10.00	12 Queens	17.00
100 Queens	75.00	Good Breeders, each	5.00
1000 Queens	700.00		

Golden Queens are reared five miles from other queen yard. Let us fill your order. We are mailing Queens promptly.

THE CITRONELLE APIARIES, Citronelle, Alabama

HONEY-DEW

By Frank VanHalter.

In this section of Kansas, and judging from the reports of other beekeepers, in quite a large territory east and west of here, there was a lot of honeydew honey produced last year. In some yards as high as a third of the crop was honeydew, or honey containing enough honeydew to ruin its sale.

As near as I could determine from records kept of my bees the flow from honeydew started the last week in May and ended about the middle of June. Bees started active work between the 10th and 15th of May, on white clover and black locust which last bloomed heavily in 1922. Supers given at that time, or sooner, contained white and dark honey mixed in the super as though the bees had worked on clover and locust and on honeydew at the same time.

Where work was started in the supers shortly after May 20 and finished before the end of June the honey was, in nearly every super, quite dark and strong. Supers started after the middle of June contained all clear clover honey except those filled late in the summer. These last contained quite a lot of light amber fall honey.

This honeydew was a dirty, greenish-black in color, a quart jar filled with it being practically opaque. It was very thick and difficult to extract from the comb. Combs wet with honeydew that were put back in the hives and filled with clover honey showed spots of dirty-looking honey where the bees had deposited the honeydew gathered from the wet combs.

It was very strong and unpleasant to the taste, having a rank flavor as though it contained some insufficiently cooked sorghum molasses. Most persons do not care for it to eat, although I have had some calls especially for honeydew honey. I have used a 50-50 mixture of it with water in my Ford radiator all winter and it worked fine, the lowest temperature being 6 deg. below zero.

The honeydew was, I believe, gathered from the leaves of oak trees. During the height of the flow the bees hummed about the oaks almost as though they were fruit trees in bloom. It would be interesting to know just how great an extent of territory produced honeydew in 1922.

Kansas.

(The only sale for honeydew that we know of is to tobaccoists for chewing tobacco. Almost anything in the way of sweets is acceptable to the tobacco chewer.—Editor.)

Bees Nearly End Legion Post's Picnic
Members of the Sanford Brown, Jr., Post of the American Legion, and their friends started to play "drop the handkerchief" at the post's annual picnic yesterday afternoon at Longview Farm. But soon they changed the game into "baffle the bees."

A swarm of bees took after the merry-makers and disrupted their plans for games on the green sward.
—Kansas City Journal.

Locality, Perhaps

In the December number of the American Bee Journal Morley Pettit, in answering a question, has found it necessary to ask two questions of the questioner. Now Mr. Pettit may know the questioner and his location and his ability to handle bees. If so his advice may be sound and good. But without this knowledge the advice may be all wrong. The fact that Mr. Pettit finds it necessary to use three or more 10-L extracting supers per colony proves that he has an extra good location and may get a honey that is slow in ripening, making it necessary to leave the honey on the hives for some time. This, however, is not the case everywhere, and to advise any and everyone to use or have ready for use several supers per colony is not good advice. In some parts of the states the main flow lasts but a few days, and one super will easily hold all the bees will get in that short time, and the honey will be extracted before the fall flow comes on. In most locations two supers are enough to take care of the best crops.

It will be safe to guess that 600 colonies with 1,200 supers properly distributed and manipulated will produce a third more honey than half that number of colonies with the same number of supers, in an average locality. I have no fault to find with the remainder of Mr. Pettit's advice. We all now the importance of good young queens, but it is not always best for the honey producer to attempt to rear his own queens. There is much to be considered before attempting to rear queens. It is all right for one, and all wrong for another.
Grant Anderson.

ROOT QUALITY**BEE SUPPLIES****FULL STOCKS PROMPT SERVICE**

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2042 Magazine Ave., New Orleans La.

Also headquarters for Elton Warner's three-banded Italian Queens, Nuclei and Combless Packages.

One Elton Warner Quality untested queen, one frame emerging brood with adhering bees, and one pound of young vigorous bees, price \$5 f. o. b. New Orleans. Extra bees, \$1 per lb.

3-frame nucleus, with Elton Warner Quality untested Queen, price \$5.50 f. o. b. New Orleans

Combless packages, \$1 for package, plus \$1 per pound for bees, and price of queen, if queen is wanted.

Young, vigorous TESTED Elton Warner Quality Queens: wonderful honey-gatherers, strain for EARLY spring shipment. \$1.60 each, postpaid.

Untested Elton Warner Quality Queens. After April 10, \$1.15 each, postpaid.

Everything guaranteed, including delivery date. No disease; 20 per cent books order; 10 per cent discount on orders of over \$20; 15 per cent discount on orders of \$60 or over.

Almacén de exportación para México y Centro América. Correspondencia en castellano.

BARNES' FOOT POWER MACHINERY

Read what J. E. Parent of Chariton, N. Y., says:

"We cut with one of your Combined Machines last winter 50 chaff hives with 7-in. cap, 100 honey-racks, 500 frames and a great deal of other work."



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We handle the finest line of bee supplies. Send for our 1923 price list. Our quotations will interest you. The Colorado Honey Producers' Association, 1424 Market St., Denver, Colo.

FRENCH EDITION**Dadant System of Beekeeping**

By C. P. Dadant

Mr. C. P. Dadant has translated the "Dadant System of Beekeeping" into French, and this book is now out and ready for distribution. It is cloth bound, well illustrated, and we recommend it to anyone desirous of obtaining his bee books in the French language. Price \$1.00.

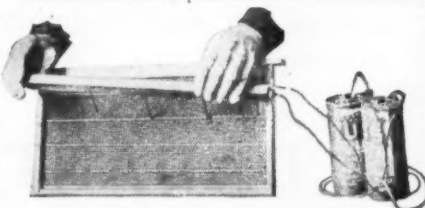
Address American Bee Journal, Hamilton, Ill., or Comptoir Apicole Quebecois, Levis, Quebec, Canada.

Booking Orders for May Delivery 1923

My introduced-laying-enroute queen; and packages. One good, vigorous, young queen, one standard Hoffman frame of emerging brood and adhering bees, and one additional pound of bees. Price complete f. o. b. Bordelonneville, \$5.00.

Additional frames of brood, or additional pounds of field bees to make larger package, \$1 each, respectively in above packages. Bees and queen Italians. Queen introduced and laying enroute to you. Health certificate attached. Safe arrival and satisfaction guaranteed. One-fifth cash books order. Send for circular and names of satisfied customers in your state. Complete references given.

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Not Postpaid.

Weight 1 lb.

Actually cements wires in the foundation. Will work with dry cells or with city current in connection with transformer. Best device of its kind on the market.

Dadant & Sons, HAMILTON, ILL.

Be Prepared

A backward spring means a quick change—from snow to fruit bloom overnight—from winter clusters to swarms in a short time.

Do not be caught with a lack of the proper super and hive supplies when the time comes for their use.

In this period "between hay and grass," make ready for the rush to follow.

Bee Supplies

We are located strategically to serve the Illinois, Iowa, Missouri territory quickly and effectively, from our home office and we have at all times, heavy stocks of all kinds of bees' supplies. In fact we are prepared.

And we handle the unsurpassed combination of "Lewis Beeware," Woodman Smokers and

Dadant's Foundation

wired, unwired and surplus.

Our agents and distributors are legion, and are located to serve you with the utmost effectiveness wherever you may be located, from Washington to Florida.

If you haven't our catalog and literature, write us and we will send it together with name of your nearest distributor.

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And do not forget the Modified Dadant Hive

THE LARGE HIVE

A PLAIN TALK ABOUT WAX AND COMB FOUNDATION

The melting point of pure beeswax varies considerably. Combs built from beeswax having a relatively high melting point, do not readily sag nor melt down in the heat of the beehive. The melting point of domestic beeswax is often too low to start with. Furthermore, there is not enough domestic beeswax produced in the United States to supply the demand, and some of the foreign wax has a melting point below that of average domestic beeswax. We have used small proportions of this ourselves, but we view with much alarm the extensive use of foreign beeswax of low melting point, by many manufacturers. Such practice can have but one result—the lowering of the melting point of domestic beeswax.

We sell thousands of pounds of beeswax to commercial users of this commodity, and we know that a higher melting point is desirable. The center ply of Three-ply Airco, as we have announced to the trade, contains a small proportion of pure vegetable wax. While there is no need of Three-ply foundation for comb honey today, vegetable wax is just as pure and healthful as beeswax. The addition of the vegetable wax in brood foundation strengthens and toughens the wax and ultimately will slightly raise the melting point of average beeswax, thus tending to correct the evil occasioned by the extensive use of soft foreign wax. From the standpoint of both the commercial user of beeswax and the user of comb foundation, the addition of a small percentage of vegetable wax is a distinct advantage, improving as it does, the quality and standard of domestic beeswax.

In no sense can this vegetable wax be called an adulterant. The vegetable wax is just as expensive and just as pure as beeswax. Three-ply beeswax is no more adulterated than is bronze, nickel steel or even steel itself, all of which have other metals or ingredients added to the base metal. Pure iron alone is not tough enough to hold a cutting edge. Likewise beeswax alone is not tough enough to sustain without stretching, a heavy comb of brood in the average beehive as used today. If we could go back to the hollow tree with its thick wall of half rotted wood, and to the irregular, crooked, immovable combs well reinforced and tied by frequent brace combs, the need for tougher wax would not be so urgent. But the conditions have changed, making necessary for full depth combs a tougher midrib that will successfully resist the dragging weight of the heavy brood, without stretching the cells to distortion. The small percentage of vegetable wax supplies the element needed for great strength—just as carbon gives toughness to the soft iron and the nickel a new character to the steel. In no sense are these elements considered as adulterations to the base metal, iron.

Any beekeeper who has wax for sale which has been rendered from combs built on Three-ply Airco, can expect to receive the same market price as for any beeswax. We know such beeswax is better for the center ply of our Three-ply foundation and for commercial purposes, therefore we want every pound of it that we can get. It is true, of course, that since drone cells will be negligible, there will be few Three-ply combs to melt, except such as are damaged through carelessness or because of disease. But we guarantee to take all wax offered us from Three-ply combs at the highest market price for beeswax.

THE A. I. ROOT COMPANY,
Medina, Ohio.

What an Association Can Accomplish

The Wyoming Beekeepers' Association has been instrumental in getting reduction of freight rates on honey from Wyoming to eastern points. Formerly Wyoming took a higher rate than California, Washington, Idaho, Colorado or Oregon.

This Association has represented the true situation before the Commerce Railway Commission and has had the rate reduced so that they now enjoy the same rate as surrounding states. This will save the beekeepers of Wyoming many hundreds of dollars each year in freight.

ONE SEASON OF FOULBROOD TROUBLE MIGHT WIPE OUT THE WORK OF YEARS.



SEND FOR A GALLON OF B-H TODAY. IT IS MADE PARTICULARLY TO COMBAT FOULBROOD.

Destroys American Foulbrood

Inexpensive B-H Treatment Restores Infected Extracting Combs and Purifies Contaminated Honey for Feeding

Do you realize that one season's epidemic of foulbrood can wipe out every single colony in your apiary?—B-H IS MADE PARTICULARLY TO COMBAT FOULBROOD, BOTH AMERICAN AND EUROPEAN.

The Beekeeper who considers his apiary in the light of a worth while investment will recognize that B-H is the greatest possible aid to saving needless waste of combs and honey through these diseases. Not only to himself, but to his

neighbors and the bee industry at large, does every beekeeper owe the duty of doing his best to combat foulbrood!

Anyone can use B-H successfully if he follows directions carefully. Experienced help is not necessary. The expense of treatment is low—insignificant as compared to the losses of frames and honey through foulbrood. Beekeepers everywhere are recognizing the merits of B-H. Early returns from thousands of users indicate the B-H is a definite advance in the bee industry.

MAIL YOUR ORDER TODAY—SEND NO MONEY.

GENERAL LABORATORIES, Madison, Wisconsin

PRICES:

Single 1 gallon pkg.-----\$ 3.00
Single 5 gallon pkg.-----12.50

General Laboratories, Madison, Wis.
Gentlemen: Please ship me -----gal.
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If by freight give name of your bank.

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You Western Producers of White Honey Can Control Your Market

All you need is a central marketing agency and a binding agreement as to price.

The amount paid producers at carlot shipping points for their honey shows them no profit. Shall we continue bidding against one another, or combine to control the price within reasonable limits? The market will consume just as much honey at a few cents per pound more, and all we need is an efficient central sales agency.

A proper organization on a large scale gives strength to the market because it develops buyers' confidence and removes competitive quotations.

Write us if you are interested. We are producers, too, and have been "getting it in the neck" along with the rest.

A few more bad years will put us all out of business. We must get together and do some constructive work. "Eventually, why not now?"

The Foster Honey & Mercantile Company
Boulder, Colorado

QUEENS

Queen rearing is now on in full blast at Vincennes. Fruit trees are giving up their nectar in abundance and we are turning out the finest queens by the bushel. Orders can be filled promptly. A card will bring our catalog describing our untested queens and also our exceptional "Service Guarantee for the Season" on Breeding Queens.



"Queens by the Bushel"

PRICES:

Untested queens, before July 1:	
One to four, inclusive	\$2.00 each
Five to nine, inclusive	\$1.95 each
Ten or more	\$1.90 each
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One to four, inclusive	\$1.50 each
Five to nine, inclusive	\$1.45 each
Ten or more	\$1.40 each
Breeding queens, service guaranteed for the season	\$10 each

JAY SMITH

ROUTE 3 VINCENNES, IND.

What Will You Get Out Of It?

The results of over a quarter of a century of careful selecting and breeding by beekeepers of world-wide renown. This, combined with the service that is pleasing America's greatest honey producers, go into every transaction.

The Superior Honey Co., of Ogden, Utah, said: "We want to thank you for your promptness in making shipment, and when we are next in the market for queens you will hear from us."

Mr. Clarence Ellison, of Belton, S. C., for five successive years got the heaviest yield ever produced in his locality by using

FOREHAND'S THREE BANDS—The Thrifty Kind.

The strain that 31 years of careful selecting and breeding has produced. We have bred and selected to produce a strain that is truly surpassed by none but superior to many; a bee that is the thrifty kind.

From every transaction you will get service that pleases and bees and queens that will make your investment a profitable one. You are assured of this by our service of the past.

We guarantee pure mating and satisfaction the world over, and safe arrival in the United States and Canada.

	1	12 to 25	25 to 99	100 up
Untested Queens	\$1.00	\$.85	\$.80	\$.70
Select untested Queens	1.25	1.00	.90	
Tested Queens	2.00	1.75		
Select tested Queens	2.50	2.25		

Pound Bees

	1	25 up
One-pound package	\$2.10	\$1.90
Two-pound package	3.50	3.30
Three-pound package	5.00	4.75

W. J. FOREHAND & SONS, Fort Deposit, Ala.

HIGH GRADE ITALIAN QUEENS

BY RETURN MAIL

3-Banded Leather Colored. Bright Yellow.

Last season we added two breeding queens to ours, one from the A. I. Root Co., and one from Jay Smith, and are rearing queens from them in separate yards.

	1 to 9	10 to 24	25 to 50
Untested queens	\$1.25 ea.	\$1.15 ea.	\$1.10 ea.
Select untested	\$1.50 ea.	\$1.40 ea.	\$1.35 ea.
Select tested	\$2.25 ea.		



FRANK BORNHOFFER, Mt. Washington (Cincinnati) Ohio

Minnesota Short Course

May 15 to 18, inclusive, is the date set for the Minnesota Beekeepers' spring short course at University Farm, St. Paul, Minn.

This is the second annual spring short course given by the Division of Bee Culture, of the University of Minnesota, and will include practical work with the bees as well as theoretical.

Programs may be obtained from the Director of Short Courses, University Farm, St. Paul, Minn., or the Division of Bee Culture.

Massachusetts Beekeeper.

Mr. John P. Coburn, who died lately in Woburn, Mass., was a life-long beekeeper. Of late years he was in the habit of disposing of his surplus colonies by selling them to the greenhouse cucumber growers to be used within the greenhouses for the fertilization of the cucumber blossoms in the late winter and early spring.

Ontario to organize.

Present indications point to a successful organization of a co-operative beekeepers' association in Ontario. A total production of about four million pounds of honey is already signed up and the association will probably control the bulk of the next crop.

Since about \$90,000 of business was handled last year without organization, it looks like the association should be in shape to do big things when it gets to going. The success of the co-operative movement in Colorado and Texas points the way to beekeepers in other sections of heavy production. Prof. Millen, of the Ontario College has been active in promoting the new enterprise.

Miss Pettit Dies

Miss R. B. Pettit, the well-known Canadian beekeeper, sister of Prof. Morley Pettit, of Georgetown, Ont., died at Phoenix, Ariz., on February 20th. Miss Pettit and her brother had gone to that city for a winter vacation and both were stricken with influenza and pneumonia soon after their arrival. Mr. Pettit is improving and we trust will be able to be about again by the time this Journal reaches our readers. We extend our sincere sympathy to the family. Mr. Pettit has promised to give us an account of his sister's life as soon as he is able to be about.

QUINN'S QUEENS of QUALITY

Have no superior, "There's a reason," are Mendelian bred, good qualities accentuated GRAY CAUCASIANS, GRAY CARNIOLANS, GRAY LOWER AUSTRIAN queens; also CYPRIANS, the 3-banded yellow bee. Queens imported in 1922, insure extreme vigor. Laws of heredity strictly observed. My queens are produced by selective breeding, in accord with these laws of nature that must be understood and applied before the best can be had. And is found only in Quinn's Quality Queens. A trial will convince YOU of their value, as satisfied patrons testify by repeat orders. Internationally known the world over.

CHAS. W. QUINN

Powhatan, Va.

RELIABLE BEES AND DEPENDABLE SERVICE

We pay transportation on everything we ship. Many fast trains north and west daily.

Prices of Packages and Queens, Express or Postage Prepaid

1-lb. pkgs. with selected young queens	\$3.25 each	(for beginners)	\$6.50 each
1½-lb. pkgs. with selected young queens	\$4.00 each	25c less per package on lots of 12 or more.	
2-lb. pkgs. with selected young queens	\$5.25 each	Untested, selected young queens	\$1.00 each
3-lb. pkgs. with selected young queens	\$6.25 each	Tested selected young queens	\$2.00 each
1-frame nuclei with 2 lbs. of bees and selected young queen		Wings of queens clipped free of charge, on request.	

Prompt delivery, safe arrival and satisfaction guaranteed. No disease. Let us book your order. Only 10 per cent cash with order, and balance just before shipment. Our new 1923 booklet telling all about our bees and clover seed now ready to mail. When comparing our prices with others, don't forget, "Jones pays the freight."

Buy some of the clover seed, far the best. See Classified.

M. C. BERRY & CO., Box 697, Montgomery, Ala., U. S. A.

NUCLEI, PACKAGE BEES and BRIGHT 3 BAND QUEENS

HARDY ITALIAN BEES and QUEENS, reared from the FINEST BREEDING STOCK, by methods and care such as give them qualities of their mothers. Read this from a veteran beekeeper who tried them: Mr. Ullis Blalock.

"Dear Friend: The season just closed has been very bad; no honey to speak of. The queens I bought of you are a fine lot, all extra good, and the largest and most prolific I ever saw, and every one purely mated. You get all my future orders. I got a square deal." (Name on request).

This is the kind of satisfaction I give and guarantee.

Prices: Packages, with queen, 1 lb., \$2.75; 2 lbs., \$4.00; 3 lbs., \$5.25. Nuclei, with queen, same price, 1, 2 and 3 frames, respectively. Queens, \$1.25 each. NO BETTER can be bought. There is no disease near here. I GUARANTEE safe arrival and complete satisfaction. Free booklet describes stock and methods. Write for it.

ULIS BLALOCK, Christine, Texas

HONEY

Beekeepers who have sold their own crop and have a steady trade for Honey should buy Honey to fill this demand. It helps to keep their own customers from going elsewhere and also tends to keep Honey prices stabilized.

White orange	In 60-lb. Tins,	
	14c lb. White sage	12c lb.
	Extra L. A. sage	10½c lb.

GLASS AND TIN HONEY CONTAINERS

2½-lb. cans	crates of 100, \$4.50
5-lb. pails (with handles),	crates of 100, \$7.00
10-lb. pails (with handles)	crates of 50, \$5.25
60-lb. tins, 2 per case, new, \$1.20 case; used, 25c.	

White Flint Glass, with Gold Lacquered Wax Lined Caps

8-oz. honey capacity	\$1.50 per carton of 3 doz.
16-oz. honey capacity	\$1.20 per carton of 2 doz.
Quart, 3-lb., honey capacity	.90 per carton of 1 doz.

HOFFMAN & HAUCK, Inc., Woodhaven, New York

QUEENS—PACKAGE BEES

THREE-BANDED ITALIANS

Place your order with us and receive the reward from our reliable stock. They are wonderful workers and our customers are getting splendid results from them in every respect. Read what others say about them:

"The 18 queens bought from you were all introduced in colonies that were badly affected with European foulbrood, and they cleaned up and Italianized 100 per cent, and I am more than pleased with the results. I will want some more of your package bees and queens next spring."—Iowa.

"I have bought package bees from you; they are wonderful workers and are admired by the local beekeepers for their beauty and gentleness."—N. Y.

In comparing our prices with others remember we pay all transportation charges.

1-lb. packages with unt. queens	\$3.25 each.	2-lb. packages with unt. queens	\$5.25 each.
1½-lb. packages with unt. queens	\$4.25 each	3-lb. packages with unt. queens	\$6.25 each.
25c less per package on shipments containing 12 packages or more; 50c less per package on shipments containing 25 packages or more.			

Sel. unt. queens, \$1.00 each; Sel. test., \$2.00 each. We guarantee pure mating, safe arrival and entire satisfaction.

HAYNEVILLE APIARY CO. HAYNEVILLE, ALABAMA

Prompt Shipments for You

Dependable Root Guaranteed Goods

THE A. I. ROOT CO. Council Bluffs, Ia.

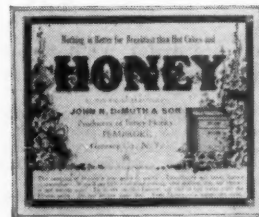
Honey Labels

So many beekeepers prefer sample labels to a catalog that we have printed samples of all our best selling labels with prices and necessary information on the margin. This makes it easy to make your order. It also gives you an opportunity to compare the various samples on your containers.

Our Motto: Best Quality at Moderate Price

Our range is from No. 117, the finest honey label ever offered which is printed in six colors, at \$4.75 per 1000, to No. 99, a good label, at only \$2.75 per 1,000.

Everything in printing for the beekeeper. Send for package of sample labels today.



Label shown is furnished in five sizes, for a small jar to a 10-pound can.

AMERICAN BEE JOURNAL, Hamilton, Illinois

Crop and Market Report

Compiled by M. G. Dadant

For our May report we asked our beekeeping friends to answer the following questions: 1. How has the higher price of sugar affected the price of honey, wholesale and jobbing? 2. How much honey has been left on hand and will be carried over? 3. What is the condition of honey plants? 4. How heavy have the winter losses been? 5. What is the condition of bees for spring?

EFFECT OF SUGAR PRICES

Practically all beekeepers reporting are unanimous in their assertion that the advance in sugar price has had no appreciable effect upon the demand for honey.

However, those located in the larger markets recognize the fact that, indirectly, the shifting of sugar prices has had an effect on honey price, and as the time goes on this is more and more evident.

It is our firm belief that the advance in price of sugar will have the effect of clearing up practically all the old crop of honey before the new crop is ready for the market. Some few reports intimate that the advance in sugar has increased the demand for honey from 10 to 20 per cent.

AMOUNT OF HONEY ON HAND

The New England states are practically cleared up of all old honey stock, as are also New Jersey, Pennsylvania and New York.

The entire South seems to be pretty well cleaned up of all old honey, except possibly a little in Mississippi and a 10 to 20 per cent carry-over in Louisiana. This should practically all be disposed of before the new crop.

The Texas crop is cleaned up in nice shape and one or two cars have been sent in to fill the demand until the new honey is available. The Texas Association has certainly worked wonders for honey sales in that state, as is shown by the prompt disposal of the 1922 crop.

One or two large lots of honey are reported still held by beekeepers in Ohio and the larger producers of Michigan and Wisconsin also report in some instances as high as 25 per cent of the honey still on hand. However, we believe that, with a few exceptions, the Central West will be fairly cleaned up except some little left in the hands of distributors. Nebraska, Kansas and Missouri all report honey stocks as low, and no question but what all will be cleaned up by the time the new crop comes on. This is also the case with most producers in Illinois, although several of the larger ones still have a considerable quantity on hand.

Probably Montana has the most adverse report, indicating that a large percentage of the extracted honey is still in the hands of producers. Colorado is fairly well clear of honey except on the western slope, which has several cars yet to dispose of, as has Utah, there being 8 cars reported in one city as in storage awaiting shipment.

Idaho has been able to dispose of most of its honey and will probably not carry over 10 per cent. Arizona and New Mexico are well cleared up and California has almost a scarcity of old honey. The orange crop is coming on now and will find a ready market.

Washington and Oregon will have no trouble in disposing of such of the crop as is still on hand.

CONDITION OF HONEY PLANTS

Practically the entire north half of the country has been covered by heavy snow, which in some localities is still on the ground. This should put the clover plants in the very best condition when the snow melts. In some sections of Illinois, Indiana and Iowa there has been a scarcity of snow, which has favored winter killing of the clover. However, spring rains have indicated that the roots of the old clover plants are not destroyed and that there is still chance for a fair crop. Southern Illinois seems to be an exception, as do also certain parts of Iowa.

Missouri will undoubtedly have a good crop and the re-

ports from the Dakotas, Nebraska and Kansas are especially flattering.

We might say that the entire country is from two to six weeks behind normal as regards weather conditions. In the southeast and south as far west as Texas, where honey plants and conditions were forward, the recent cold spell has set the bees back and in some instances has destroyed the early bloom. However, conditions are not unfavorable for the development of further bloom later on.

It is too early to determine condition of honey plants in the Inter-mountain territory and northward, although they seem to be about normal. California is worried over possibilities there. The orange flow has developed well, but there is a scarcity of rain, especially in the south two-thirds of the state, which does not augur well for a good crop of sage, and later honey. In fact, different reporters have stated that unless rain comes in quantity before May 1 there will be a very light crop of honey for California this year. The northern half of California, as well as Oregon and Washington, seem to have fared better as to rainfall, and prospects are favorable.

WINTER LOSSES

As usual, unprotected bees have suffered heavy losses, although the bees in the hands of specialists seem to have come through winter with small loss.

There is one condition, however, which seems to be universal over the northern half of the country and that is that there will be a large amount of spring dwindling this year. This is partly caused by the extreme long winter which we have had, as well as by the fact that in many instances bees have gone into winter on rather poor stores.

In our own locality the bees gathered aster late in the fall, which is having an undesirable effect this year. Bees are either extra strong where they have come through well, or else they are weak and need the early fruit bloom and very favorable weather in order to build up so as to make colonies for the honey flow.

The breeders of the South are complaining that they are not getting the volume of orders for package bees they had expected, but it is the writer's personal opinion that this will change as soon as spring opens up in the North. Most certainly there will be heavy losses from dwindling and dying out of colonies, which will be made up by the securing of package bees. It is difficult to determine at this early date just how heavy the loss will be, but we would venture the opinion that the winter loss combined with the spring loss will be much heavier than it was a year ago. However, the colonies which come through in good shape will be exceptionally strong.

As far as the early blooming trees are concerned, these have been held back by the inclement weather, which is favorable, inasmuch as it should allow the bees to build up on fruit bloom, without any serious setback later on. Most certainly the bees have been held back by the bad weather, and at this date (April 16) the cool weather still continues, with very few days when bees can fly and gather pollen.

SUMMARY

All in all, early conditions would not indicate that we are to have a heavy honey flow generally this year, and on the other hand, conditions would not seem to point toward colonies being built up to sufficient strength in the clover regions to take best advantage of the honey flow.

As far as the 1922 honey crop is concerned, most certainly this will be pretty well disposed of before the new crop is on hand. Indications are that prices will not be any lower than a year ago, and possibly higher, especially early in the fall.

Just how prices will develop during the later fall and early winter will be determined by general conditions and also by the attitude of the beekeepers as to whether they flood the market by forcing a heavy amount into the larger markets early or move the crop only as demand develops.

CLASSIFIED DEPARTMENT

Advertisements in this department will be inserted for 5 cents per word, with no discounts. No classified advertisements accepted for less than 35 cents. Count each initial or number as one word.

Copy for this department must reach us not later than the 15th of each month preceding date of issue: If intended for classified department it should be so stated when advertisement is sent.

BEEES AND QUEENS

BEAR'S MOUNTAIN BRED BEES. Page 252.

HONEY & PACKAGE BEES—Atwater.

I WISH TO THANK the purchasers of my bees and queens for this season's business gained by my advertisement in both the American Bee Journal and Gleanings in Bee Culture. J. P. Anthony, Apalachicola, Fla.

INSURE your honey crop; order Simmons' queens and nuclei now. Get our prices. Fairmount Apiary, Livingston, N. Y.

EUREKA QUEENS—American Breed—For particulars address A. C. F. Bartz Co., Keystone, R. F. D., Jim Falls, Wis.

Reference: Bank of Bloomer, Bloomer, Wis.

NUCLEI, PACKAGE BEES and ITALIAN QUEENS for spring delivery, the kind customers recommend to their friends. We have been shipping queens and bees for many years and aim to please our customers. Three-banded Italian queens, untested, \$1; tested, \$2. Write for price list on breeders' combless bees and nuclei.

Allenville Apiaries, Allenville, Ala.

PACKAGE BEES, NUCLEI and QUEENS—2-lb. package or 2-frame nuclei with pure Italian queen, \$3.50 each; 3-lb. package or 3-frame nuclei with pure Italian queen, \$4.00 each. See my large ad. elsewhere before placing your order.

Brazos Valley Apiaries, Gause, Texas, H. E. Graham, Prop.

FOR SALE—Golden Italian queens, high in quality, but low in price; untested, \$1.15; six, \$6.50; twelve or more, \$1.00 each. Safe arrival. No disease known in this section.

Hazel V. Bonkemeyer, Randleman, N. Car., Rt. No. 2.

FOR SALE—Italian queens, \$1.00 each; 1 doz., \$11; \$80 per 100. One 3-frame nucleus, \$5 with queen; 3 lbs. bees, \$6. All orders booked with 10 per cent by June 1, 5 per cent discount. Orders delivered at once.

Hickory Shade Apiary, Otterville, Mo.

3-BANDED ITALIAN QUEENS of best quality. I am taking in with me as owner of half my bee business, Mr. D. E. Shaner, vocational student from Greensboro Agricultural and Apicultural Institute, of Alabama. We expect to retain the same motto, clean, honest, and square dealing, as I have kept up in the past. This is my 23rd season with the bees, 12th year of queen breeding. Prices, one for \$1.25, six for \$7, 12 for \$13. Health certificate.

Curd Walker & Shaner, Queen Breeders, Scotts Sta. Ala.

RUSH YOUR ORDER—Pure Italian queens, selected untested, 1, 90c; 12, \$10; 100, \$70. Selected tested, 1, \$1.35; 12, \$14. Safe arrival and satisfaction guaranteed; no disease. We ship nothing but the best.

W. C. Smith & Co., Calhoun, Ala.

WE ARE OFFERING "Reared in Season" untested Italian queens at \$1.00 each in quantities of 1 to 4. For 5 to 10 queens, 90c each; 11 to 24 queens, 85c each; 25 to 49 queens, 80c each. For 50 or more, 75c each. A better price after June 1st. Write for circular.

R. V. Stearns, Brady, Texas.

FOR SALE—20 colonies Italian bees in Root 10-frame painted standard metal cover hives. Wired combs. No disease. Price, \$12 per hive.

Merton Church, Highland Park, Ill.

FOR SALE—30 colonies bees, \$10 per colony, in 1-story hives; \$15 in 2-story hives.

F. J. Rettig, Wabash, Ind.

WARRANTED—Pure mated Italian queens. How many queens have you lost by introducing my special mailing cage? Never fails. No honey used in candy. No danger of disease; \$1.25 each. Queens will be ready to mail the 1st of June.

Daniel Danielsen, Brush, Colo.

I AM READY to fill orders at reduced price, Caucasian or Italian 8-frame nuclei and queens.

Peter Schaffhauser, Havelock, N. Carolina.

FOR SALE—Three-frame nuclei hybrid bees with guaranteed pure untested Italian queen, \$5 each. Safe arrival guaranteed.

Carl L. Wilson Apiaries, Mt. Vernon, Ga.

WE ARE BOOKING orders now for spring deliveries. Bright Italian queens, untested \$1.00; six, \$5.00; 100, \$75. Virgins 50c each, 100, \$40.

P. B. Skinner, Greenville, Ala.

NUCLEI and package bees; send for circular.

Allen Latham, Norwichtown, Conn.

GOLDEN ITALIAN QUEENS—None better.

One, \$1.00; six, \$5.00; twelve, \$10. Select, one, \$1.25; six, \$7.00; twelve, \$13. Virgins, one, 60c; 12, \$5.00. Clipped when requested; ready April 15. Money back if not satisfied.

Crenshaw County Apiary, Rutledge, Ala.

SHE-SUITS-ME QUEENS—1923, after June 1, \$1.50 each. One dollar per queen when ordered four weeks or more in advance.

Allen Latham, Norwichtown, Conn.

BIG bright Golden Italian Queens, the kind that are bred for beauty and also honey gathering qualities. We guarantee to please you. Price, untested, \$1.25 each, 6 for \$6.00, 12 for \$11.00; \$85 per 100. Tested, \$2.00.

Honoraville Bee Co., Honoraville, Ala.

FOR SALE—Missouri bred Italian queens, \$1 each; 6 for \$5.

L. E. Alkwein, 1206 N. 13th St. St. Joseph, Mo.

QUEENS—High grade Italian queens, three-banded; also goldens. Untested, one, \$1.25; 6, \$6.50; twelve, \$12. Tested, one, \$2.00; six, \$11.50; twelve, \$22.00. Package bees—Strain of bees, St. Romain Honey Girl and Davis. Safe arrival and satisfaction guaranteed.

P. O. Watkins, Cullasaja, N. C.

FOR SALE—Golden queens of 15 years' careful breeding; untested, \$1.25 each, or 6 for \$7.00; 12 or more, \$1.00 each. Tested, \$2.00 each. One-lb. package with untested queen, delivered, \$3.25; 2-lb. package with untested queen, delivered, \$5.00. Promptness and satisfaction my motto. Shipments beginning about April 15.

R. O. Cox, Box 25, Rutledge, Ala.

PETERMAN'S QUEENS have the name and reputation of being leaders in quality, size and color. I sort out and ship only a large select, thrifty laying queen, killing all that do not come up to this standard. The past season proved to me this pays big for repeat orders. Prices: 1, \$1.25; 6, \$7.00; 25 at \$1.00 each. Circular free.

H. Peterman, R. F. D., Lathrop, Calif.

GOLDENS, Italian queens for 1923. The big, bright, hustling kind. Satisfaction guaranteed. Price, \$1 each, six for \$5, twelve for \$10, one hundred for \$75. Tested, \$1.75 each. Also a few two-frame nuclei, with queen, for \$4.75.

E. F. Day, Honoraville, Ala.

SELECT ITALIAN QUEENS—Not the cut-price kind. Tested, \$2.50; untested, \$1.25 each, and worth more. Circular free.

Geo. W. Coltrin & Son, Mathis, Tex.

UNSURPASSED ITALIAN QUEENS—Ready June 1. Untested, 1, \$1.25; 6, \$7; 12, \$12.50; 50, \$50; 100, \$95. Tested, 1, \$2; 6, \$11. Every queen is mated and laying before she is mailed.

J. D. Harrah, Freewater, Ore.

THE VERY BEST BUY in package bees for May delivery. Card brings circular and prices.

The Scott Apiaries, LaGrange, Ind.

FOR SALE—Bright three-banded Italian queens, 1 to 12, \$1.25 each; 13 to 25, \$1.15 each; 10 per cent discount when ordered 4 weeks or more in advance. Safe arrival and satisfaction guaranteed. Ready to ship June 1 to June 10.

R. B. Grout, Jamaica, Vt.

FOR SALE—Golden Italian queens, untested, \$1.15; 6 for \$6.50; 12 or more, \$1.00 each. Tested, \$2.00. Select tested, \$3.00. No disease of any kind. Bees very gentle and good honey gatherers.

D. T. Gaster, Rt. 2, Randleman, N. C.

THREE-BANDED Italian queens, untested, \$1.25; per dozen \$12. Two-pound package bees, \$4.00; with queen, \$5.00. Satisfaction given.

J. Allen, Catherine, Ala.

"Florida First" Queens for April, May and June, \$1.50 each; 5 for \$7. Circular free.

R. C. Boswell, Manager, Indian River Apiaries, Wilson, Fla.

GOLDEN ITALIAN QUEENS—Produce bees solid yellow to tip; disease resisting, prolific, gentle and good honey gatherers. Untested, \$1.25; select untested, \$1.50 each; tested, \$3.00.

Dr. White Bee Company, Sandia, Texas.

PURE Italian bees and queens, as good as the best. Prices: Untested, \$1.00 each or \$10.00 per dozen. Package bees, 1-lb., with untested queen, \$2.50; 2-lb., with untested queen, \$3.50; no disease. Our bees are state inspected.

O. P. Hendrix & Son, West Point, Miss.

GOLDEN QUEENS, GOLDEN—Ready after April 1. Untested, 1, \$1.25; dozen, \$11; select untested, 1, \$1.50; dozen, \$13.50. Write for prices on nuclei and pound packages. Pure mating and safe arrival guaranteed in U. S. and Canada.

Tillery Bros., R. 5, Greenville, Ala.

NUCLEI—June and July delivery; large, strong 3-frame nuclei with queen, at \$4.75 each; lots of 10 at \$42.50.

The Foster Honey Company, Boulder, Colo.

DO YOU NEED QUEENS?—Try mine; you cannot beat the quality at any price. Am working for the name of being honest and reliable, selling the best queens. Let me show you. Circular with prices free.

H. Peterman, R. F. D., Lathrop, Calif.

THREE-BANDED ITALIAN QUEENS—Select untested, \$1 each; \$10 per dozen. Pound packages of bees; golden Italian queens at above prices; honey gatherers (no disease). Satisfaction guaranteed.

W. T. Perdue & Sons, Fort Deposit, Ala.

PACKAGE BEES for 1923—Now booking orders for Yancey Hustlers. See larger ad for prices.

Caney Valley Apiaries, Bay City, Texas, Yancey Bros., Owners.

FOR descriptive price list of Carniolan, Caucasian, Italian and Golden queens, write to Grant Anderson, Rt. 2, Waco, Texas.

QUEENS, QUEENS—From my old leather-back Italian queen. She is the head of my apiaries. Ready to ship after April 15. Untested, \$1.25; 12, \$1 each. Select untested, \$1.50; 12, \$1.25 each. Tested, \$2.50; 12, \$2.25 each. Select tested, \$3.00 each. O. O. Wilder & Son, Rt. 2, Box 14, Corpus Christi, Texas.

3-BAND ITALIANS, developed from the best and most popular strains by continuous selection. When I can produce or discover better, they will be adopted. Queens, untested, after May 15, \$1.50 each, 6 for \$8. Tested, \$2.50 each. CARNITALIANS—Five miles from my Italian yard I raise Carnitalians; a cross derived from Jan Strgar Carniolan queens and Golden Italian drones. I calculate fifty years to get color marking fixed. Don't wait for that; the blend of blood and quality is there now. Tested queens, after June 1, \$2.50 each.

John Protheroe, Rustburg, Virginia.

PACKAGE BEES—2000 big, strong, healthy colonies; will be ready to supply package bees in the spring. Italian or Carniolan queens. Let me quote prices and book your order early. A small deposit reserves shipping date. Circular free.

J. E. Wing, 155 Schiele, Ave., San Jose, Calif.

HARDY ITALIAN QUEENS, \$1 each.

W. G. Lauer, Middletown, Pa.

BEEES BY THE POUND, ALSO QUEENS—Booking orders now. Free circular gives prices, etc. See larger ad. elsewhere.

Nueces County Apiaries, Calallen, Texas.

E. B. Ault, Prop.

SEE my display ad. in this number.

Jes Dalton, Bordelonville, La.

BEEES and QUEENS at reduced prices. Cypress hives for sale. Write for terms.

Otto Diestel, Elza, Ga.

MERRILL'S three-banded Italian queens are guaranteed to arrive safely and give satisfaction. Queens will be ready for shipment June 1, 1.00 each. Try them.

R. E. Merrill, 125 Mechanic St., Muncy, Pa.

PACKAGE BEES, nuclei and queens, April and May delivery. Special, 2 lbs. bees on frame emerging brood with queen introduced and laying en route, \$4.75; 1 lb. of bees with queen, \$3.90; 2-lb. package, \$4; 3-lb. package, \$5. Nuclei same price. All the above bees bright three-band Italian and include pure Italian select untested queen. Queens, select untested, \$1.25; 6, \$7; 12 or more, \$1 each. Strong nuclei, full weight packages; certificate with each shipment. Satisfaction and safe arrival guaranteed.

J. L. Morgan, Apalachicola, Fla.

Formerly Tupelo Honey Co.

I AM BOOKING ORDERS for 3-banded Italian queens for May 30 and after. My strain of bees hold the Indiana record for comb honey per colony in a run of 10 years. Send for booklet and prices.

Charles Kennard, Knightstown, Ind.

FOR SALE—On account of low prices in honey, I am offering bees at pre-war prices. Package bees, 5 to 10 lbs., at \$1.35 per lb.; 10 to 25 lbs., at \$1.20 per lb.; 25 to 100 lbs., at \$1.10 per lb.; over 100 lbs., at \$1.00 per lb. Entire satisfaction guaranteed. Write for special low prices on queens, nuclei and full colonies of bees. Bank references furnished on request.

Winfield Gear Apiaries, Walnut Grove, Calif.

CONNECTICUT QUEENS—Highest grade 3-banded Italians. Ready June 1st. Untested, 1, \$1.15; 12, \$12; 50, \$47.50; 100, \$90. Two-pounds bees with queen, \$4.50; 3 pounds with queen, \$5.50; two-frame nucleus with queen, \$5; 3 frames with queen, \$6. No disease. Safe arrival and satisfaction guaranteed. Conn. Valley Apiaries.

A. E. Crandall, Berlin, Conn.

TRY THE ACHORD STRAIN OR ITALIANS

—They have helped produce wonderful honey crops in many states. Good-natured, nicely marked, vigorous three-banded Italians. Bred in two of the largest, best equipped queen-rearing apiaries in the South, and shipped to you in clean, convenient, up-to-date packages, with full instructions for hiving. Delivery April 15th and later. Express or mail shipment. By express, 1 lb. bees, \$2.25 each; 25 or more, \$2.15 each; 2 lbs. bees, \$3.75 each; 25 or more, \$3.50 each; 3 lbs. bees, \$5.25 each; 25 or more, \$5 each. If wanted by parcel post add 15c each to the price of the 1-lb. size and 25c each to 2 and 3-lb. sizes. Also add postage. Mailing weight of the 1, 2 and 3-lb. packages is 4, 6 and 8 pounds each, respectively. Select untested queens for the above packages, or for mailing, \$1.25 each; 10, \$11.50; 25, \$25. Young tested queens, \$1.75 each. Order early and state date you wish shipment. You will not be disappointed in the stock and service we give you. For a more complete, descriptive price list, send a postal with your address.

W. D. Achord, Fitzpatrick, Ala.

PACKAGE BEES for Idaho, Oregon, Washington, Montana, and British Columbia. Buy near home and get bees full of vigor and vitality; 1,200 colonies to draw from. Write for prices, naming desired date of shipment. E. F. Atwater, Meridian, Ida.

Established here in 1901. Former Field Agent in Beekeeping, U. S. Dept. of Agr.

FREE! FREE! FREE!—We will give free with each order for queen or bees, one of our patent applied for brood frames that we guarantee no sagging and the bees will build to the bottom bar—then see your nice comb. Queens, \$1.00. Circular free.

F. M. Russell, Roxbury, Ohio.

Mr. Russell, Roxbury, Ohio. Dear Sir—The cheap cull queen from imported mother bought of you, wintered on two-frames with quart of bees, stored 100 lbs., a daughter 50-lbs. Thirteen powerful colonies with southern bred queens have 20 to 65 lbs less stores than in April, have made no surplus. This is a poor bee territory and has been the poorest year in past 40. Culls that can get honey while others starve is good enough for me. Yours, E. B. Foster.

CARNIOLANS and ITALIANS—I work for normal conditions that produce good normal queens. No better bees exist than stock my apiaries. The best known introducing cage and instructions free, with 12 untested queens, 1, \$1.25; 6, \$7; 12, \$13; 25 or more \$1 each.

M. G. Ward, Lathrop, Calif.

THAGARD'S ITALIAN QUEENS—Three-bands and goldens that have stood the test; 1 to 4, \$1.00; 5 to 11, 95c; 12 to 24, 90c each. See our March advertisement for prices on our imported three-bands from Italy. Get our prices on package bees.

The V. R. Thagard Co., Greenville, Ala.

THE STAPLETON APIARIES are located in south Georgia, near the Florida line, and we are in position to make early shipments of both bees and queens. Queen rearing yard is in charge of Mr. A. S. Blanks, who has had eight years experience. See display advertisement in this issue for prices.

N. L. Stapleton, Colquitt, Ga.

THREE-BAND bright Italian queens for 1923. Guaranteed purely mated. Good hustlers and gentle. One, \$1.00; 6, \$5.00; 12, \$9.00. Write for folder or the principle of introducing. Orders booked as received. J. Frank Diemer, Liberty, Mo.

PACKAGES—2 lbs. with queen, \$4 in lots of 10; lots of 6 \$4.25; single, \$4.50. Shipped on Hoffman frame, April 15 to June 1st; choice healthy Italians, everything guaranteed. Order now with remittance. R. S. Knight, Route 2, New Orleans, La.

100 2-LB. PACKAGES Italian bees and queens, May and June delivery. Shipped on frame of wired foundation. Untested, \$6.00; tested, \$7.00; tested queen only, \$2.50. For June, will supply queens bred from a daughter of Cutts Famous 577-pound honey queen, that has made extra good in our yard. Orders must be booked ahead. Send for our circular.

E. F. Quigley & Son, Unionville, Mo.

PURE ITALIAN QUEENS—Untested, \$1.00; tested, \$1.25; 2-lb. package, \$2.75. Add price of queen wanted. Safe arrival guaranteed after May 10. Write for prices on colonies and other specials.

Birdie M. Hartle,

924 Pleasant St., Reynoldsville, Pa.

QUEENS and Package Bees, the producing kind. Prompt shipment after April 15. Satisfaction guaranteed. Circular free. Select Italian queens, \$1 each; \$10 dozen. Two-pound packages with queen, \$4.50.

P. M. Williams, Ft. Deposit, Ala.

HOLLOPETER'S Quality Queens plus Satisfactory Service, makes each season better. Select untested queens from finest three-banded stock, June, each \$1.50; 6, \$7.50; 5 per cent books order and insures timely delivery. Circular.

J. B. Hollopeter, Rockton, Pa.

WILLOW DELL three-banded Italian queens and nuclei, the kind that bring results. Best to winter; none better. A trial will prove it. May delivery with queens: 2-frame nuclei, \$4.00; 3-frame, \$5.25; Jumbo frames, \$4.50 and \$5.75; queens, \$1.25 each.

H. S. Ostrander, Melleville, N. Y.

HONEY AND BEESWAX

BEAR'S MOUNTAIN BRED BEES. Page 252.

HONEY & PACKAGE BEES—Atwater.

FOR SALE—1,500 lbs. extracted honey put up in five, ten and sixty-pound cans. Will sell any part or all.

Elmer Kommer, Woodhull, Ill.

FOR SALE—White clover extracted honey in 60-lb tins, per case 120 lbs., net \$13. Also 500 lbs. of beeswax.

Edw. A. Winkler, Joliet, Ill., Rt. 1.

FOR SALE—Liquid clover honey: 24 1-lb. jars, \$5.40; 24 2½-lb. cans, \$9.50; 12 5-lb. pails, \$9.00; 6 10-lb. pails, \$8.40; 2 60-lb. cans granulated, \$13.50.

Lewis Klaty, Carsonville, Mich.

FOR SALE—Two-tons white comb honey at reduced prices; also dark extracted; state your wants. H. G. Quirin, Bellevue, Ohio.

FOR SALE—White and amber extracted honey. Write for prices. State quantity wanted. Dadant & Sons, Hamilton, Illinois.

HONEY FOR SALE—In 60-lb tins; water white orange, 14c; white sage, 12c; extra light amber sage, 10½c New York State buckwheat, 10c, for immediate shipment from New York.

Hoffman & Hauck, Woodhaven, N. Y.

FOR SALE—Michigan milkweed-raspberry white honey, mild and deliciously pleasing. In 60-pound cans, at 13½c per pound.

A. G. Woodman Co., Grand Rapids, Mich.

FOR SALE—Our own crop white clover and amber fall honey in barrels and cans; also white alfalfa in cans. State quantity wanted and we will quote prices. Samples on request.

Dadant & Sons, Hamilton, Ill.

ATWATER HONEY—Carlot, 8c; small lots 8½c; pails all sold.

E. F. Atwater, Meridian, Idaho.

FOR SALE—Choice clover extracted honey in new cans and cases, in carload lots or case lots. Quality unexcelled. Write for prices stating quantity desired.

J. D. Beals, Oto, Iowa.

FOR SALE—White honey in 60-lb. cans; also West Indian in 50-gal. barrels. Samples and prices on request.

A. I. Root Co.,

23 Leonard St., New York City, N. Y.

BEEWAX WANTED—We need large quantities of beeswax and are paying good prices now. Ship to us at Hamilton, Ill., or Keokuk, Iowa, or drop us a card and we will quote f. o. b. here or your own station, as you may desire.

Dadant & Sons, Hamilton, Ill.

SUPPLIES

HONEY & PACKAGE BEES—Atwater.

BEAR'S MOUNTAIN BRED BEES. Page 252.

FOR SALE—Used scoloped section holders, 4¼x1½ K. D., no nails, \$20 per thousand.

Used sawed separators for above, \$5 per thousand; followers, 2c each; used springs, 40c per hundred, cash with order. First come first served.

B. F. Smith, Jr., Fromberg, Mont.

ADAPTABLE BEEHIVES are sound in principle and are practical. For free information address

Geo. P. Wood, Peekskill, N. Y.

FOR SALE—50 Boardman feeders with caps, in lots to suit; good as new, 14c each.

Merton Church,

Highland Park, Ill.

FOR SALE—140 new ten-frame standard hive bodies in flat; bargain price for the lot.

Bee-Dell Apiaries, Earlville, N. Y.

FOUNDATION at jobbing price, 100 lb. lots.

A. V. Small, successor to C. F. Buck,

Augusta, Kans.

BEE EQUIPMENT—For extracted or comb honey. Write for prices.

The Foster Honey Company, Boulder, Colo.

CONNECTICUT and Rhode Island headquarters for Root's Beekeepers' supplies.

A. W. Yates, 3 Chapman St., Hartford, Conn.

WESTERN BEEKEEPERS—We can demonstrate that you can save money on buying bee supplies of best quality. Write for our latest price list.

The Colorado Honey Producers' Association,

Denver, Colo.

HAVE YOU any Bee Journals or bee books published previous to 1900 you wish to dispose of? If so send us a list.

American Bee Journal, Hamilton, Ill.

FOR QUICK SALES—Dadant's Light Brood Comb Foundation in 25-pound boxes only, at 50 cents per pound.

Lake Region Honey Co., Birchwood, Wis.

FOR SALE

HONEY & PACKAGE BEES—Atwater.

FOR SALE—Used 8 and 10-frame standard hives.

Carl Franke, Mauston, Wis.

FOR SALE—30 hives of bees in 8-frame up-to-date hives; straight combs drawn from wired foundation, in good shape, plenty of stores; \$8.00 per hive. Reason for selling, husband's death.

Mrs. Elmer Bishop,

Virden, Ill.

FOR SALE—Lewis wax press. Good condition. Used only once, \$11.00.

R. J. Coon, Ames, Iowa.

FOR SALE—20 colonies Italian bees. Good strain; extra supplies.

A. C. Gould, Burchfield, W. Va.

WRITE for our circular of our "Reared in Season" Italian queens. We want to tell you about them and why they are good. Also why we can sell them cheaper after June 1st.

R. V. Stearns, Brady, Texas.

FOR SALE—Twelve Italian colonies for \$70. Owner died.

Otto Biermann, Malcom, Iowa.

FOR SALE—Two acres near Cincinnati, overlooking Ohio River, including bees, buildings, etc., \$2,000. Easy payments.

Dougherty, California, Ohio, Box 66.

BEEES AND GOATS work well together. Pure blood registered Toggenburgs, bucks and does, for sale. Will crate and ship anywhere. Pedigrees sent on request.

Jas. B. Prewitt, Elsinore, Calif., Box 5.

FOR SALE—In whole or in part. I'm sold down to about 200 colonies of bees; 800 10-frame supers (8 frames each), with drawn wired foundation combs, 8-frame (Root) power extractor, 2½ H. P. engine, 3 Lobee rotary pumps, saw table, 150 new 10-frame hives in K. D. of Michigan white pine, and various other articles. The two yards can remain as located. Terms if desired, with acceptable backing. Reason for selling, old age and laziness.

A. W. Smith, Birmingham, Mich.

FOR SALE—Used 8-frame hive bodies and supplies.

Thos. Atkinson,

Rt. No. 5, Box 200 D, Omaha, Neb.

APIARY FOR SALE—Five well located apiaries equipped for extracted honey production for sale at exceptionally low prices.

Foster Honey Company, Boulder, Colo.

FOR SALE—New 10-frame Standard hives, nailed and painted, \$2.00.

F. Olson, 1923 Grand, St. Paul, Minn.

FOR SALE—Good second-hand 60-lb cans, 2 cans to a case, boxed, at 60c per case, f. o. b. Cincinnati. Terms cash.

C. H. W. Weber & Co., 2163 Central A. e.

Cincinnati, Ohio.

FOR SALE—Our own crop white clover and amber fall honey in barrels and cans; also white alfalfa in cans. State quantity wanted and we will quote prices. Samples on request.

Dadant & Sons, Hamilton, Ill.

FOR SALE—10 colonies Italian bees in new Langstroth hives, wired straight combs, \$15.00 a hive.

James Wheeler, Maroa, Ill.

FOR SALE—1,600 section holders, for Danz. sections; 1,800 M. fences, 400 supports for section holders, 400 super springs, the inside fixtures for 200 ten-frame supers for Danz. sections 4x5x1 $\frac{1}{2}$. Have been used one or two seasons; are like new; will take \$75 for lot.

Earl L. Baker,
Lake City, Mich.

FOR SALE OR TRADE—Ancona hatching eggs, Chicago winners. Wanted—bees or supplies.

Joe Miller, Galena, Ill.

FOR SALE—Automatic entrance bee feeders. Also Canadian patent right. Descriptive literature free.

L. H. Achenbach, Manufacturer,
Pottsville, Pa.

FAR SALE—40 colonies Italians, 10-frame (wired) hives; no disease; \$10 each for bunch, \$12.50 each for five. Also super and brood foundation.

J. F. Coyle, Penfield, Ill.

FOR SALE—Forty-acre bee location in Minnesota clover region. Priced to sell. Reasonable terms. Write.

Harry Kirk, Armstrong, Iowa.

BEEES FOR SALE—Nuclei or colonies. Write for special prices on large quantities.

Box 437, Boulder, Colo

MISCELLANEOUS

HONEY & PACKAGE BEES—Atwater.

TRADE new 3 H. P. gasoline engine for bees.

Will Miller, Dodgeville, Wis.

FOR SALE—Pure Hubam clover seed.

Edw. A. Winkler, Joliet, Ill., Rt. 1.

TO EXCHANGE—Good typewriter for package bees.

Robert F. Evershed,
Irondequoit, N. Y., Beachwood Sta.

OLD-TIME BEE BOOKS—New list ready.

John E. Miller,
Kings Bridge, New York City.

THE BEE WORLD—The leading bee journal in Britain, and the only international bee review in existence. It is read, re-read and treasured. Will it not appeal to you? Specimen copy free from the publishers. The Apis Club, Benson, Oxon, England. Send us a postcard today. It is well worth your little trouble.

HONEY-NUT CANDIES—Made from pure honey, nuts and chocolate. The most wholesome candy made. Try it and be convinced; \$1 per pound, postpaid.

Fairmount Apiaries, Schuylkill Haven, Pa.

WILL EXCHANGE bees or queens for a Barnes or similar bee saw outfit; also for typewriter.

J. L. Morgan, Apalachicola, Fla.

EARN \$20 weekly, spare time at home, addressing, mailing music circulars. Send 10c for music, information.

American Music Co. 1658 Broadway,
New York.

THE "Archiv fur Bienenkunde" is a valuable scientific publication. "It merits the appreciation of all beekeepers acquainted with the German language," says the Bee World (January, 1923). "The Archiv fur Bienenkunde, now in its fifth volume, is of as high grade as any bee journal which comes from abroad, dealing especially with the scientific aspects of beekeeping," says Gleanings in Bee Culture (February, 1923). Annual subscription, \$1. Specimen copy free. Publisher, Theodor Fisher, Freiburg im Breisgau, Kirchstrasse 31, Germany.

SITUATIONS

HONEY & PACKAGE BEES—Atwater.

WANTED—Man to operate beehive machinery. Give experience.

F. J. Rettig, Wabash, Ind.

WANTED—Situation for season of 1923 from April until November, with a specialist beekeeper, as helper. Some experience. West preferred.

F. Kelly, care John Search,
151 W. South Temple, Salt Lake City, Utah.

WANTED—A position in inspection, extension, teaching beekeeping or managing a commercial apiary, by a middle-aged married man. University of Wisconsin graduate. Master's degree. Special training in Entomology, Bacteriology and beekeeping. Experience in apiculture, inspection, and teaching beekeeping. Foulbrood my specialty. Write for particulars.

H. G. Ahrens,
310 South Charter St., Madison, Wis.

WANTED—Man to work bees coming season. Give age, experience and wages wanted. Address,

The Rocky Mountain Bee Co.,
Box 1319, Billings, Mont.

WANTED—Single man for steady work with bees. Modern equipment, extracted honey. Give age, experience and wages expected in first letter.

B. F. Smith, Jr., Fromberg, Mont.

WANTED

HONEY & PACKAGE BEES—Atwater.

WANTED—Extracted honey suitable for baking purposes.

W. A. Hunter,
1609 S. 5th St., Terre Haute, Ind.

WANTED—Shipments of old comb and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendering. Fred W. Muth Co.,
204 Walnut St., Cincinnati, Ohio.

BEEESWAX WANTED—We need large quantities of beeswax and are paying good prices, now. Ship to us at Hamilton, Ill., or Keokuk, Iowa, or drop us a card and we will quote f. o. b. here or your own station, as you may desire.

Dadant & Sons Hamilton, Ill.

I WOULD LIKE to hear from party wishing to buy interest in a good bee and honey business.

Chas. M. Boothby,
Griggsville, Ill.

WANTED—Old postal stamps and envelopes.

R. LeMang,
25 Quincy St., Passaic, N. J.

WANTED—A straw skep. Also good one-story and half observation hive.

Thos. Atkinson,
Rt. No. 5, Box 200 D, Omaha, Neb.

WANTED—Six 2-lb. package bees with queen. For Sale or Trade—Coon hound 1 year old, female; Indian motorcycle, engine model G, twin cylinder magneto; O. K. shape. Both \$30.

Ben Merkle, Cissna Park, Ill.

WANTED—To exchange Oliver typewriter No. 9, in first-class condition, for reversible honey extractor.

Alfred Stutt, Rt. 5, Creston, Iowa.

MAY QUEENS FROM MY PURE ITALIAN STOCK

Will get you ready for the honey flow

Untested	-----	\$ 1.00
100 untested	-----	90.00
Tested	-----	1.75

No Disease.

D. W. HOWELL, Shellman, Ga.

BEEES — ITALIAN BEEES — BEEES

Full colonies with Italian queen at \$15.00 3 for \$30.00.

3-frame nucleus with Italian queen at \$6.00.

3-lb. package with Italian queen at \$5.50, 5 at \$5.00.

No disease. Safe arrival and satisfaction guaranteed.

Van's Honey Farms,
Van Wyngarden Bros., Props., Hebron, Ind

QUEENS

We are booked up for this season on package bees and nuclei, but can furnish FINE LEATHER COLORED ITALIAN QUEENS at ONE DOLLAR EACH.

THE LOVEITT HONEY CO.

602 N. Ninth Ave., Phoenix, Arizona.

Michigan Has Large Enrollment of Bee Students

A recent letter from Mr. Russell H. Kelty, in charge of the beekeeping courses at the Michigan Agricultural College, gives the information that during the year just passed Prof. Kelty had a total enrollment of 531 students in beekeeping courses alone.

This certainly shows a very healthy growth, probably a much larger enrollment than was presumed by the unattached beekeeper.

The effect of all these students once turned out to commercial beekeeping should not necessarily be to enlarge the production of honey so much as to make for better co-operation and better sales effort.

WHEN DO THE ORANGES BLOOM?

This item, taken from the "Western Honey Bee," may be of interest to our eastern beekeepers who do not know the answer to that question:

"The other day a gentleman from the East, desirous of obtaining information about the honey crop of Southern California, called at this office and asked the County Inspector this apparently plain question: 'When do the oranges bloom?'"

"I do not know," was the unexpected reply.

"Why, you said you have been inspector for 13 years, and now you say you do not know?"

"Well, here is Mr. Blackburn, of Gardena, asking for his permit to move his bees from this county into the orange belt. This is March 13. Last year he obtained his permit on May 3. This was 51 days later in 1922 than this year. The blossoming depends upon the season. With a range of nearly two months between two successive years, you can see that it is impossible to reply definitely to your question."

PRICE ANNOUNCEMENT

Notwithstanding the recent heavy advance in the price of lumber, we hope we shall not be obliged to advance our price on hives, supers, frames, sections, or on other lumber goods for the present. We try to believe that the serious inflation now taking place will not be of long duration, and that our present stocks of pine and basswood will carry us over until towards the end of the season.

Unfortunately, metal has also advanced sharply in price, and we have had to make recent purchases. This has compelled us to advance our prices on some items composed chiefly of metal, and a uniform 10 per cent advance on prices as listed in our 1923 catalog went into effect April 15, on the following items:

All extractors, as listed in our catalog.

Honey storage tanks.

The Root Capping melter with table KD. No. D472801.

The Root Uncapping can, No. D472811.

The Root Uncapping can and wax press No. D472804.

The Root-Hatch wax press, Nos. D472809, D472T06.

THE A. I. ROOT COMPANY,
Medina, Ohio.

ITALIAN BEES — NUCLEI

Our nuclei are pure Italian stock made up with an ample supply of bees and good combs of sealed brood, supplied with a young laying queen. Delivery begins April 15.

NUCLEI

One-frame nucleus Italian bees, with untested queen	\$3.50	In lots of 25 or more, each	\$4.00
In lots of 25 or more, each	3.00	Three-frame nucleus Italian bees, with untested queen	5.50
Two-frame nucleus Italian bees, with untested queen	4.50	In lots of 25 or more, each	5.00

PACKAGES

We also offer you the same stock of bees in young packages, giving you good young bees, and full weight. Delivery begins May 1.

One-pound package Italian bees, with untested queen	\$3.25	In lots of 25 or more, each	4.00
In lots of 25 or more, each	3.00	Three-pound package Italian bees, with untested queen	5.50
Two-pound package Italian bees, with untested queen	4.50	In lots of 25 or more, each	5.00

QUEENS

Tested and untested queens that are proving their superiority to beekeepers over the entire United States and Canada.

	To June 15.	After June 15.		To June 15.	After June 15.
One untested Italian queen	\$1.25	\$1.00	One tested Italian queen	\$2.00	\$1.25
Ten or more	1.00	.75	Ten or more	1.50	1.00

Freedom from disease, safe arrival and satisfaction guaranteed.

CYPRESS SUPPLIES

Standard dimensions, accurately made and are of the most durable woods known. Many are pleased with the excellent quality and low price of these goods.

100 Hoffman brood frames	\$4.90	5 10-frame comb-honey supers	4.00
5 10-frame one-story metal cover hives	15.75	5 10-frame shallow extracting supers	4.25
5 10-frame bodies with frames	6.80		

Send for catalog of complete line.

The STOVER APIARIES, Mayhew, Miss.

MONEY SAVED

BEE SUPPLIES

TIME SAVED

Roots goods at factory prices with WEBER'S Service

Send us a list of your wants and we will quote prices that will save
you money

C. H. W. WEBER & CO., 2163-65-67 Central Ave., Cincinnati, O.

QUEENS

Three-band Italians

PACKAGE BEES

QUEENS

Silver Gray Carniolans

Western headquarters for PACKAGE BEES and RELIABLE QUEENS. Order now for spring delivery. Shipping season for PACKAGE BEES starts April 1, closes July 1; Queens April 1 to October 1. A small deposit reserves your shipping date.

Young bees, every one from a clean colony, with no honey used in shipping cages, also County Inspector's Certificate of bill of health with each shipment I guarantee. Write for circular and prices, stating quantity desired and date of delivery.

J. E. WING, SAN JOSE, CAL.

155 SCHIELE AVE.

For American Foulbrood Use

Dr. Hutzelman's Solution

PRACTICAL**ECONOMICAL****RELIABLE****SAFE**

Save your combs. They are the most valuable part of your beehive equipment. Any comb can be made free from disease at about half the present cost of frame and foundation. The labor of disinfection is much less than that of melting up diseased combs, nailing together and wiring new frames.

By following simple directions, any beekeeper who can successfully get rid of foulbrood by the usual method of shaking and destroying the diseased combs, can go a step farther and disinfect the diseased combs, so that they will be as good as they were before infected.

MY CLAIMS ARE AS FOLLOWS

1. The solution penetrates wax as it is found in a comb.
 2. The solution penetrates all propolis.
 3. Cells filled with pollen are penetrated.
 4. Diseased larvæ in all the stages characteristic of American foulbrood are disinfected.
 5. Surfaces of wax wet with honey are disinfected.
 6. The solution comes in intimate contact with every part of a comb ever touched by bees.
- Full information will be sent on request.

Patent Pending.

Prepared solely by the originator of the process.

DR. J. C. HUTZELMAN, Glendale, Ohio



Needed by Every Beekeeper Good Queens In Every Queen and Package



There is a guarantee of satisfaction that you have a right to expect
BUY FOREHAND'S S-BANDS, YOUNG AND HUSKY

The three vital needs of successful honey production are. GOOD QUEENS, GOOD MANAGEMENT and GOOD LOCATION. You furnish one, Nature one and I furnish the other. But you must be the judge of all. You don't want a location in a desert, neither do you want poor queens. You have the same right to choose and reject queens as you have to choose your location. My guarantee allows you this.

Your dollar's worth or your dollar back. Order now and get your bees and queens when you want them. Ten per cent is all that is required with order.

Untested	-----	\$1.00 each; 10 or more, \$.90 each			1	25 and up
Select untested	-----	\$1.25 each; 10 or more, \$1.25 each				
		1-4	5-11	12-24	One pound pure Italian bees with young queen....	\$3.00 \$2.90
Tested	-----	2.50	2.45	2.40	Two pounds pure Italian bees with young queen....	5.00 4.75
Select tested	-----	4.00	3.95	3.50	Three pounds pure Italian bees with young queen....	6.00 5.75

All bees and queens guaranteed to reach you in good condition in the United States and Canada.
Write for prices on large lots.

N. FOREHAND, RAMER, ALABAMA

NUCLEI

QUEENS

POUND PACKAGES

Jensen's Apiaries can save you real money on your purchases of bees and queens. We have had the experience, we have the bees and equipment. We want to supply your wants, not only this year, but in years to come. Our foundation was built upon sound business principles, with the idea of making this business a lifetime occupation. We know your success is ours; therefore when you deal with us you are assured of your money's worth. Our growth has far surpassed our expectations, and it is indeed encouraging. Our motto will remain "To give you the best value for the price you pay, both in goods and service, consistent with a living wage for ourselves." Pure Italians only. Select breeding. Up-to-the-minute methods. No disease, prompt shipments, safe arrival guaranteed.

Queens: Untested, 75c each, \$70 per 100. Select Untested, \$1 each, \$90 per 100. Tested, \$1.25 each.
 Breeders, \$5 and \$7.50 each.
 Package Bees: 2 lbs. Italian bees and untested queen, \$4.50; 25 or more pkgs., \$4.00 each.
 3 lbs. Italian bees and untested queen, \$6.00; 25 or more pkgs., \$5.00 each.
 Nuclei: 2-frame with queen (your choice of untested or young tested, \$5 each; 25 or more, \$4.50 each.
 3-frame with queen as above, \$6.50; 25 or more, \$6.00 each.

For a square deal address your orders to,

JENSEN'S APIARIES, CRAWFORD, MISS.



For years we have been shipping thousands of pounds of bees all over the U. S. and Canada

Order Direct from this Ad.



We are prepared to take care of your rush orders

2-pound package bees, \$3.75 each, 25 or more, \$3.60 each.

2-frame nuclei same price as 2-pound packages.

3-pound package bees, \$5.25 each; 25 or more \$5.00 each.

3-frame nuclei same price as 3-pound packages.

QUEENS FREE when 25 or more packages are ordered. For less than 25 lots, add the price of queen wanted.

Untested queens, \$1.00 each, 25 or more 85c each, \$70.00 per hundred.

This is a special **SALE** on untested queens of high quality.

Select untested, \$1.70, 25 or more \$1.50 each.

Select tested \$2.65 each, 25 or more \$2.25 each.

Tested \$2.25 each, 25 or more \$2.00 each.

Breeders \$5.00 to \$15.00.

ITALIAN

CARNIOLANS

GOLDENS

NUECES COUNTY APIARIES, Calallen, Texas

"GRIGGS SAVES YOU FREIGHT"

TOLEDO

Is the place ALL BEE MEN turn for GOOD BEE SUPPLIES. We mean, of course, those who wish "QUALITY" Goods, such as **LEWIS AND ROOT** turn out.

Their name means something on BEE SUPPLIES. To the successful HONEY man these goods, with GRIGGS SERVICE insures you of the Best at Lowest Cost to You.

OUR FREE CATALOG

Sent on request. Ask for it.

MAPLE SYRUP, HONEY and BEESWAX bought and sold by us or taken in exchange for supplies.

THE GRIGGS BROS. CO.

TOLEDO, OHIO.

"GRIGGS SAVES YOU FREIGHT"

PACKAGE BEES FOR 1923

THREE-BAND ITALIANS ONLY. BRED FOR BUSINESS

A 2-pound package of the Yancey Hustlers, with a select untested queen, for \$5.00; 25 or more, \$4.75 each. Attractive prices on large lots. One-fifth cash books your order. Safe arrival and satisfaction guaranteed on every package and queen shipped. Orders are now coming in for spring delivery. Better send in yours and make sure of shipping date. We do not accept more orders than we can fill promptly.

CANEY VALLEY APIARIES, Bay City, Texas

YANCEY BROS., OWNERS

Quality and Service From

FLORIDA BRED GENUINE THREE BAND LEATHER ITALIANS

Shipped on good combs of natural stores insures arrival in fresh condition, and quickly build strong, hustling colonies. Constant improvement in select breeding from bees possessed with rare qualities of vigor, gentleness and beauty enables us to offer a great honey gathering strain. Safe arrival and satisfaction guaranteed. No disease. Certificate of inspection with each shipment. 20 per cent cash books order, balance before shipment.

Prices include choice queens.

	1 to 11	12 to 24	25 or more
2 lbs. ----	\$4.50	\$4.25	\$4.00
3 lbs. ----	5.50	5.25	5.00
3-fr. nuclei	5.75	5.50	5.25
10-fr. colonies	\$15.00.		

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BURR COMBS

Side Lights—Bright and Otherwise

By G. H. Cale

A deuce of a title to grace the top of a serious page. Burr comb is a disgrace, charged against poor management or poor judgment. When numerous, they are moral wreckers and debasers of ethics. A verbal burr comb may, therefore, be a dangerous thing and it is at the risk of smug repute that I try the page, just once—(Maybe oftener, if the boss will let me.)

Burr Combs in Practice

Those who have not been to Hamilton do not know that Dadant & Sons and the American Bee Journal are separate institutions, two and one-half miles apart. Some of us work in both places. It is a great scheme. When I get tired of one job, I take a vacation in the other.

Dadant & Sons hold me responsible for the prosperity of six to seven hundred colonies of bees. It is a joy when full supers pile up in a honey flow. The days have no monotony. It means hard work, but the reward is evident.

Our hardest work, in the past three seasons, however, has been of a disagreeable sort, concerned with American foulbrood and its eradication. Illinois is universally blest with this scourge and, at times, it has seemed as though 90 per cent of it had camped in our yards. We have trucked and sweat, burned and scraped; and sweat and scraped again. Still it is with us.

This season we start with sterilized equipment. All super combs have been destroyed; supers, escape boards, and so forth boiled in a lye bath; empty hives and parts cleaned and scorched and metal goods washed in lye. The honey-house floors have been scraped and floors and walls painted.

We used sodium hypochlorite with paint brush and sprayer as an added measure. After the spring crop of disease in the yards is cleaned up we hope to be sweet once more. It has been worse than what Sherman said about war.

Expense Accounts and Overhead

In working over our records and accounts, the cost of disease and its treatment is found to be over one-half the annual overhead. That cuts a huge slice from the net profits and is worth all it costs to eliminate it.

Overhead is a great will-o'-the-wisp. It expands and gets puffed up, entirely by itself, without notice. I often wonder how the beekeeper can keep any tab on it when no cost accounts are kept. For three years, we have relatively careful records of material, labor and mileage, and it is only now becoming evident that a large part of our overhead can be eliminated by systematic manage-

ment. It will take two or three years to change our methods to bring about this reduction.

Most beekeepers do their work with the help of members of the family. Nobody is paid anything and the car or truck is the family bus. So why worry.

Here the beeyards are a department of a big business concern. Everything is paid for in cold cash; labor at current shop wages, materials cost and cars on a mileage and replacement basis. It makes a difference. We have yards in a radius of 25 miles in two directions; two pairs to the south and two to the east, besides the home yard and hospital yard, making 10 yards in all. If a trip is made to the two yards farthest south it costs \$5 for mileage and \$3.50 per day for the labor for one man. At this rate, it pays to have things well planned and to make as few trips as possible.

Many will criticize such wages for labor, but cheap help is ruinous. We have tried it. Our men are intelligent, are hustlers, and we have trained them to the job. They do not stop for the clock. Often they start before 6 in the morning and get back at dark. Several times we have camped on the job. They are worth their price. If we can't conduct beekeeping on as sound a business basis as other business and make money at it, it is a failure, and we will quit for something else.

Burr Combs in General

Here is an old burr that chews tough, but wears well. There is an old rhyme about, "There was a man in our town, and he was wondrous wise, he jumped into a bramble bush and scratched out both his eyes." It's true, every word of it. We've got one of 'em.

He rushed his honey to the stores before any other fellow could get a look in and sold at a low price. Now, several months after, honey cannot be disposed of here at a profit. He fixed the prices.

As beekeepers, we should give a good portion of our time to familiarizing ourselves with marketing problems. It is self-evident that any standard commodity must bring a profit to the producers and distributors or it will not remain a standard commodity. It will be replaced by other products which may be handled with profit. Sugar has replaced honey largely because of the underproduction of honey and the uncertain margins in its distribution.

We need not fear an overproduction of honey for many years to come. According to reliable figures, the American people consume 1½ pounds of honey per capita, while the consumption of sugar is 94 pounds per capita. Yet, our honey crop annually disappears. It will take a

tremendously increased production to modify this ratio materially.

The best service we can render is to increase our output by every possible means and lend material encouragement to the beginners in beekeeping. The doctrine of selfishness, which decries the beginner and pronounces him unwelcome, is entirely false.

The Need of Market Standards

There is a sad lack of adjustment in the market standards of honey. It may be purchased in all degrees of cleanliness, and in a multitude of containers, at a wide range in price. This is written in a town of 2,000 and, in one grocery, honey is offered in fiber containers, quart and pint glass jars, pound glass jars, and 5 and 10-pound pails. Some of the honey is amber, some white. The labels show no grade marks whatever. On the other hand, in this same store, glucose or corn syrups, of several brands are offered, all in standard tins at a uniform price.

The grocer says he handles large quantities of the syrup and but little of the honey. There are other reasons for this disparity, perhaps, but the lack of a standard is one of the most pertinent.

Outline of Beekeeping Course in Michigan

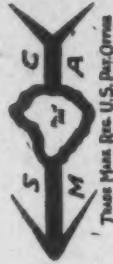
Our good friend Russell H. Kelty, is author of a bulletin giving an outline of courses in beekeeping to be used in Michigan High Schools and published by the Michigan Agricultural College. It contains a thorough and rather detailed outline of practical and theoretical beekeeping, with good references. The interesting part of the outline is the capable and well balanced way in which the subject matter is covered. Teachers in agricultural high schools, and even in some of the colleges, will find this publication of much use.

Those interested should write to Prof. R. H. Kelty, Department of Entomology, Michigan Agricultural College, Lansing, Mich.

Uniting

There are always a few weak and queenless colonies in spring, and to attempt to build them up for honey production is usually a waste of time which can be spent to better advantage in other work. If they are disease free, it is good practice to unite them with moderate colonies, which will be helped by the increased strength. The process is simple. Place a single thickness of newspaper with two or three lead pencil holes punched in the center, over the frames of the colony to be helped, and set the weak colony on top, bottom board removed. The bees gnaw away the paper and gradually work together.

We use a quicker method, which has, so far, been satisfactory. The bees of both colonies are sprinkled with peppermint, with a mist sprayer, using one teaspoonful of peppermint to a quart of water. Extra frames are taken away and the two lots of bees placed in one hive body. The queens seem to fight it out and leave one to continue the brood rearing.



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